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RECTAL

AND ANAL SURGERY

WITH

DESCRIPTION OF THE SECRET METHODS OF THE ITINERANT SPECIALISTS.

BY

EDMUND ANDREWS, M. D., LL.D.,
Professor of Clinical Surgery, Chicago Medical College, Surgeon to Mercy Hospital, Etc.

AND

EDWARD WYLLYS ANDREWS, A. M., M. D.,
Professor of Clinical Surgery, Chicago Medical College, Surgeon to Mercy Hospital, Etc.

SECOND EDITION REVISED AND ENLARGED, WITH ILLUSTRATIONS AND FORMULARY.

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PREFACE TO THE SECOND EDITION.

The rapid sale of the First Edition of this manual has compelled the preparation of a second much sooner than was anticipated. Advantage has been taken of the opportunity thus given to re-write and enlarge almost every part of the work, and to introduce several new chapters and an appendix. A few cuts have also been added.

A chapter has been introduced upon the Anatomy of the Rectum, which, it is thought, will aid the explanations found in other parts of the work. Works upon general anatomy do not usually contain all that is needful for a comprehension of the questions that have been raised in rectal pathology.

A chapter on Proctitis and its treatment has also been inserted, the subject being one now clearly recognized as of clinical importance.

As in the earlier edition, the chief emphasis has been put upon the practical side of the subject, and an endeavor has been made fairly to outline all the forms of treatment for all affections, including the secret methods of the local and traveling "Rectal Specialists."

Further to make this book a *vade mecum*, in the hands of those who must hurriedly turn many books in the intervals of active practice, a compact FORMULARY has been prepared, which contains in classified form every prescription in the body of the work and a considerable number of others. These are all *tried* remedies and many of them have their authors' names affixed.

With this formulary for reference, the practitioner who has once read the book, can by almost instantaneous reference secure the necessary details for the treatment of any given case which is before him. These formulas have been collected from a very large number of works in various languages. Over fifty are given, and these are nearly all that can be found in a score or

more of the best modern treatises, those being omitted, of course, which are practical repetitions of each other.

A chapter has also been given to the *sacculi Horneri* and columns of Morgagni in order more clearly to expose the ridiculous pathology which some have sought to connect with these innocent structures.

6 East-Sixteenth Street, Chicago, *Jan. 1, 1889.*

PREFACE TO THE FIRST EDITION.

The itinerant "Rectal Specialists" of the Western States have become so numerous that very general notice has been attracted to their methods, and one good result, at least, has been brought about through their influence: Their competition has compelled physicians to give more attention to the neglected subject of rectal diseases. Hence has arisen an urgent call for information upon two points:

1. What are the best modern methods of diagnosis and treatment known to the regular profession?

2. What are secret methods of the "specialists," and what their value?

To answer these questions we have written this book. We have endeavored to condense into it the results of our own special investigations and the established opinions, unequivocally stated, of authorities both European and American. To this we have added, in each department, the secret formulas of the irregulars which, for several years, we have been collecting.

The evolution of the itinerant pile doctor is an amusing bit of history, and here may be given space more properly than in the text.

About 1871, a young and ingenious physician in Central Illinois hit upon a means of removing piles by injecting into them, with a hypodermic syringe, a caustic mixture of carbolic acid and olive oil. Having tested the plan and found that it often effected perfect cures he abandoned an insignificant local practice for a very lucrative business as a traveling pile doctor. The method was kept a secret, but its fame extended and the original inventor and his partners were enabled to sell the right to use it for large sums to regular and irregular practitioners in a large number of places.

Many of the itinerants who bought and used the secret were

not medical men at all, yet even in their hands a certain amount of success was obtained, and reputation of being able to cure piles "without pain or operation" was fairly well sustained.

Regular physicians were for a number of years wholly at a loss to account for the success which these itinerants obtained. Our own discovery of the secret resulted partly from the indiscretion of a "specialist" who exemplified the saying *in vino veritas*, and partly from the information obtained by a Chicago druggist who furnished the same man and others their solutions. We published the knowledge thus obtained simultaneously in five prominent medical journals, and as a result were shortly in receipt of hundreds of letters from persons of all classes, with reports of thousands of cases, and the results, both good and bad, of the method. The sale of "rights" ceased quickly. In several cases application was made for our testimony that the publication had been made at a certain date, in order to enable persons who had been victimized to recover money paid for what was no longer really a secret. The sums so paid for exclusive rights in a limited district were from one thousand to fifteen hundred dollars.

The modern Western "Rectal Specialist" is lineal descendant of the original pile doctor. He uses still, in common with many reputable physicians, the hypodermic method in treating piles, but his evolution has proceeded so far that he now undertakes to treat other common rectal diseases as well, in a fashion peculiarly his own and suited rather to his own convenience as an itinerant than to his patient's real welfare. He no longer buys his secret and local right to practice, but invests from fifty to one hundred dollars in one of the "systems." He thus obtains a complete set of instruments and small secret manual of instructions which "enable persons of *no particular skill* to treat successfully all rectal diseases." As a matter of fact many of these persons are not medical graduates at all, but mere adventurers whose entire knowledge of their specialty consists in what their little book of instructions has furnished them. In some instances the itinerant is not allowed to know the composition of the various remedies directed by the secret pamphlet. He must buy them of the author of the "system," thus continually paying him tribute. Several of these "systems," by underselling each other have greatly reduced their prices, so that from three hundred dollars

they have now fallen in price to fifty, or even less, and are much improved in quality.

The itinerants themselves, moreover, have now enlarged their field of operation and their incomes by adopting an iniquitous mass of pathological rubbish concerning the *sacculi Horneri* and Morgagni's columns. There are few things more melancholy than the weakness of afflicted human nature for all kinds of quackery. If, however, there are differences in degree of charlatanism, that form which invents imaginary diseases for its victims is surely more vicious than that which only offers useless remedies.

From what has been said of the general attainments of the "Rectal Specialists" it will be seen that most of them are too ignorant to know better when told that the *sacculi Horneri*, the papillæ and columns of Morgagni (long ago discovered, and studied by anatomists and rectal surgeons) are signs of disease hitherto undescribed. They have a motive, too, in believing that these simple structures are lesions, which demand treatment. A new source of revenue, not taxed by the author of any system, has been offered them and they have availed themselves of it with eagerness.

Thus the evolution of the pile doctor proceeds. From knowing originally but one thing he has come to a smattering of five or six, and is called a "Rectal Specialist."

Most practitioners have greatly neglected the study and treatment of common surgical affections of the rectum and anus, and left an important field vacant for the occupation of charlatans and self-styled experts. This manual has been prepared with a view to furnishing practical rather than historical or theoretical information, for which the reader is referred to the systematic treatises such as the works of Curling, Van Buren, Esmarch, Cripps and Ball, or special monographs like those of Bodenhamer, Allingham, Kelsey, Smith, Yount, and others.

6 East-Sixteenth Street, Chicago, *Nov. 1, 1887.*

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RECTAL AND ANAL SURGERY.

CHAPTER I.

ANATOMY AND PHYSIOLOGY OF THE RECTUM.

The rectum is that portion of the great intestine extending from the left sacro-iliac synchondrosis downward to the anus. Its relations to the other organs of the pelvis are shown in Fig. 1.

The anus is the terminal orifice of the rectum, including the nerves, vessels, muscles and integuments which constitute the mechanism of the organ. The length of the rectum in the living state is from six to eight inches, but in post-mortem relaxation it becomes greater. In the main it follows the curve of the sacrum, being sharply concave in front, so that the name rectum (straight), given by the ancient anatomists from its straightness in the inferior animals, which alone they dissected, is wholly false in the human anatomy. At the lower border of the prostate gland, the anterior concavity ceases, and the gut turns abruptly downward and backward, giving at that point a concavity behind. The upper part of the rectum lies somewhat to the left of the median plane of the pelvis.

The interior of the organ is almost smooth, showing only in two or three places any tendency to the abundant formation of large folds and pouches seen in the colon, yet the few valve-like projections which exist are sufficient very seriously to embarrass the examination of the viscus by bougies and bulb sounds.

The Peritoneal Coat.—The peritoneum nearly surrounds the rectum at its upper extremity, but as we trace it

downward it leaves, first the posterior, and then the lateral surfaces, and is absent altogether in most cases from the lower two inches. At a somewhat variable height, the peritoneum is reflected upward in front, forming a cul-de-sac, and passing over the bladder in the male, and the uterus in the female. It would be of great importance in surgical operations if there were a fixed and invariable height, below which the peritoneal pouch never extended, but examination of cadavers has so far failed to fix this danger point, that the anatomists contradict each other surprisingly, as the following list of opinions as to its height above the anus shows:

Malgaigne,	6 to 8	centimetres	in	males	and	4 to 6	in	females.		
Lisfranc,	4	inches	"	"	"	6	"	"		
Ferguson,	$10\frac{1}{2}$	ctm.	"	"	"	15 ctm.	"	"		
Richet,	$10\frac{8}{10}$	"	"	"	"	$16\frac{2}{10}$	"	"	"	
Blondin,	$8\frac{1}{10}$	"	"	"	"	$4\frac{1}{10}$	"	"	"	
Velpeau,	$5\frac{1}{2}$ ctm.	with	bladder	empty	and	8 ctm.	distended.			
Legendre,	"	"	"	"	"	"	"	"	"	"
Sappey,	"	"	"	"	"	"	"	"	"	"
Dupuytren,	7	centimetres.								
Luschka,	$5\frac{1}{2}$ to 8	"								
Hyrtl,	8	"								
Sanson,	11	"								
Quain,	4	inches.								
Gronj,	4	"								
Roberts,	$2\frac{1}{2}$	"								

These wide discrepancies may be partly due to careless observation, but they arise mainly from the great variations found in the cadavers examined. In short, the danger point has no fixed level, and varies even in the same patient with the fullness or emptiness of the bladder, being higher when this viscus is full, and lower when empty.

The most that can be averred is this: In no ordinary case will the peritoneal fold be found nearer to the anus than an inch and a half, but as hernial elongations of the pouch occasionally exist, the surgeon is compelled to hold himself

in readiness to meet both the peritoneum and small intestines at any level, even below the sphincter (if he happens to be dealing with a prolapse).

The Muscular Coat.—The three bands of longitudinal fibres pertaining to the colon become thickened as they descend upon the rectum and spread out so as to envelop the whole organ in a somewhat uniform coating. At the lower end however, certain fascicles become separate as they approach the sphincter, and constitute the longitudinal ridges which are quite visible in the living state but which are scarcely discernible in the post-mortem relaxation. The circular muscular fibres lie inside the longitudinal ones, and are rather loosely connected to the latter, so that they often come down in prolapsus, leaving the longitudinal ones behind. As we descend, the lower portion of the circular fibres becomes much thicker, constituting what is called the internal sphincter. Its lower border terminates abruptly at an elastic ring of fibrous tissue which forms the verge of the anus. The fibrous ring may often be seen through the mucous membrane as a narrow and somewhat obscure whitish circle called "Hilton's white line."

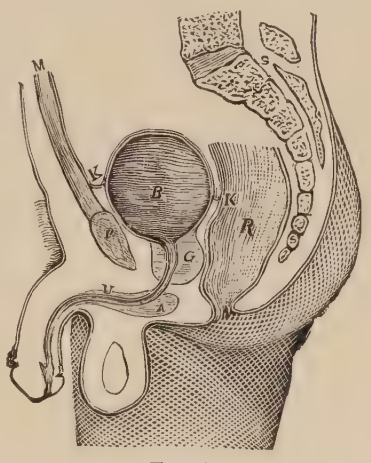

FIG. 1.
SECTION OF THE MALE PELVIS CORRECTED FROM A FROZEN CADAVER.
R. The Rectum. B. The Bladder. K. K. Reflections of the peritoneum before and behind a distended bladder. G. The Prostate. U. The Urethra. A. The Bulb of the Urethra. P. The Pubis. S. The Sacrum. M. Rectus Muscle.

Just above the verge of the anus some fascicles containing both muscular and fibrous tissue project as ridges under the mucous membrane and are called the columns of Morgagni. In post-mortem relaxation they are obscure and spread out in a reticulated form, as shown in the upper

cut of Fig. 22, but in the living state the action of the sphincter compresses the bands laterally, so as to make them assume a perpendicular position. They then appear as short longitudinal ridges closely crowded together, each about a centimetre long, and converging to an insertion into the fibrous ring of the anal verge. They are often described as mere folds or wrinkles of the mucous membrane, but this is an error. By close inspection the delicate and translucent mucous membrane can be seen to glide loosely over the more substantial framework of the columns beneath, but conforming to their shape. The lower ends of the ridges are connected by delicate webs covered by mucous membrane and forming little pouches at the lower ends of the grooves between the columns. The pouches are called the sacculi Horneri, after the celebrated anatomist Horner who described them. Their function is to retain a reserve of mucus which is pressed out by the passage of the fecal mass, and lubricates it at the moment of expulsion. The sacculi, like other organs, are sometimes diseased, and may require surgical treatment, but they are usually normal and healthy organs. Many of the itinerant "pile doctors" traversing the country claim that the sacculi are essentially and always abnormal and diseased tissues and they make an important part of their fees by slitting them down.

The Mucous Coat.—The mucous membrane lining the rectum has certain microscopic peculiarities of interest to the histologist, which it is not necessary for our purpose to give in detail. Suffice it to say that its glandular structure secretes freely a tenacious, transparent mucus having a double function. First, it is antiseptic, and prevents the putrid fermentation of the fecal mass during its stay in the rectum; and secondly, it lubricates the organ to facilitate the act of expulsion.

The mucous membrane just above the verge of the anus is almost transparent in the healthy state, and so exceedingly extensible that it sinks into pouches before the pressure of

the blunt hook like the softest and thinnest india rubber, and unskilled examiners deceive themselves with the idea that they find the sacculi Horneri wherever the blunt hook happens to take hold. The true sacculi, however, exist only at the lower ends of the grooves between the columns of Morgagni.

Between the grooves there are a few small papillæ, often very obscure, situated just above the verge, in a position analogous to the carunculæ myrtiformes of the vagina. Under each one is situated a small bulb or enlargement of a nerve twig.

The papillæ are probably tactile organs, which under the friction of the fæcal mass in defecation provoke reflex contractions of the expulsory muscles above. The traveling pile doctors generally claim that they are diseased projections, and must always be snipped off with the scissors.

The External Sphincter Muscle.—This organ is a thin plane of muscular fibres, surrounding the anus as the orbicularis oris does the mouth. It is funnel-shaped, the inner edge being turned upward and attached to the fibrous verge of the anus, while the outer edge curves downward and outward. The general form is elliptical, the posterior extremity arising from the tip of the coccyx, and the anterior being inserted into the fibrous raphé of the perineum. Its superficial fibres are rather closely related to the skin, and throw the latter into radiating folds. The two sphincters acting together close the anus.

The Skin.—As above stated, the skin of the anus is very closely connected with the surface of the external sphincter. It is studded with hairs, and lies in radiating folds. At the line of junction with the mucous membrane it is richly supplied with sensory nerves, so that it is subject to excessive pain in many diseased conditions.

The Connective Tissue.—This is thin and dense on the external surface of the external sphincter. Deeper and surrounding the rectum the connective tissue is very loose, to

allow of the movements of the rectum, a condition which permits an extensive burrowing of pus when abscesses form there. This accounts for the fact that anal fistulas often lead to cavities almost surrounding the rectum.

Arteries.—The arteries of the rectum and anus consist of three pairs, the superior hæmorrhoidal, which arise from the superior mesenteric, the middle hæmorrhoidal, which have a variable origin, and the inferior hæmorrhoidal, which spring from the internal pudic. They are all freely connected by anastomoses. Those ramifying above the verge of the anus form an abundant network between the mucous membrane and the muscular coat, and in cutting operations in that part are liable to bleed dangerously, unless properly secured.

Veins.—The veins constitute a complete network under the skin and mucous membrane, extending the whole length of the organ. They inosculate freely with each other. Those outside of the verge join together to make the external hæmorrhoidal veins, and terminate in the internal pudic trunks. Those in the anus proper combine into the middle hæmorrhoidal veins, which send their blood to the internal iliac trunks. The superior hæmorrhoidal veins arise from numerous minute blood sacs, quite variable in size, but averaging about three-sixteenths of an inch in diameter when injected, which lie under the mucous membrane a little above the anus. Good anatomists believe that this is the normal condition of things, and that the little blood sacs are healthy organs, and not incipient hæmorrhoids. Their proper function, if they have any, is a matter of conjecture. Proceeding upward from these sacs between the mucous membrane and the muscular coat of the rectum, the superior hæmorrhoidals at about three inches above the verge pass through certain foramina, or "button-holes," to gain the connective tissue outside the rectum, and thence proceed to join the portal circulation on its way to the liver. Verneuil, of Paris, believes that the contraction of these "muscular

button-holes" often obstructs the superior hæmorrhoidal veins, causing distention of the little blood sacs near the anus, and thus originating piles. The older pathologists have generally believed that the true seat of obstruction is in the capillory circulation of the liver itself. Each of the blood sacs sends a small anastomotic twig through the sphincter to join the external hæmorrhoidal plexus, thus making a regular anastomotic connection between the portal and the general systems of veins.

Lymphatics.—The lymphatic trunks of the more external parts converge to the glands in the groin, while those higher up join the glands of the pelvic and abdominal groups, hence cancers and chancres of the anus infect the inguinal glands.

Nerves.—The rectum and anus are copiously supplied with nerves, both from the sympathetic and the spinal systems. The spinal supply predominates up to a little above the verge of the anus, but as we trace the rectum upward we find the spinal twigs gradually giving way to those of sympathetic origin, so that at three inches above the anus the sense of touch in

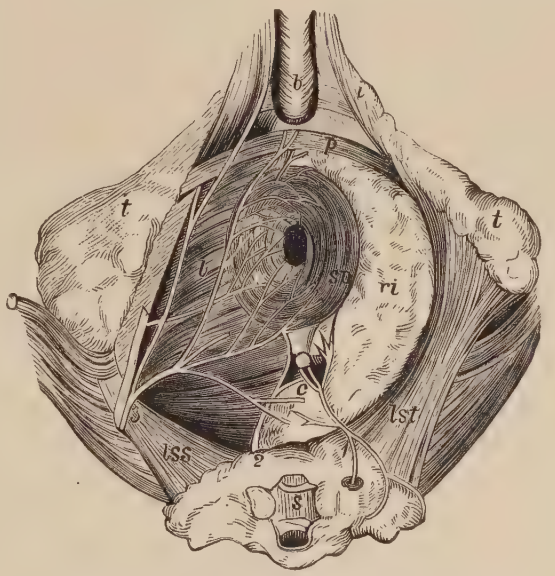

FIG. 2.—NERVES OF ANUS AND RECTUM.

1. Sacral Nerves: posterior root distributed to coccyx and ext. sphincter. 2. Anterior Root, to ext. sphincter. 3. Pudic Nerve and its branch the inferior hæmorrhoidal. *t.* Tub. ischii. *s.* Sacrum. *c.* Sacrum. *sp.* Ext. sphincter. *I.* Levator ani. *p.* Transversus perinei. *ri.* Ischio-rectal space.

the healthy organ is almost absent, while at the verge itself we have one of the most acutely sensitive surfaces of the body. The spinal trunks come mainly from the sacral plexus. Owing to the complicated supply from both systems, the reflexes of the rectum and anus are exceedingly numerous and energetic, causing frequent perplexity and some mistakes in diseased conditions as to the real seat of the patient's malady.

CHAPTER II.

METHODS OF EXAMINING THE RECTUM.

Like all other diseases depending for their diagnosis upon skill and accuracy in physical examinations, rectal troubles are the source of endless blunders and failures on the part of those who are content with half measures, or who let mere inference take the place of that persistent study which is due each individual case.

The false method is that of the bungler and amateur who is only right by hap-hazard; the true one is that of the professional expert who cannot be balked by petty obstacles, but who will reach success where others have failed, not less by his dogged persistence and thoroughness than by his superior knowledge.

Preliminary Inquiries.—The patient's own account of his ailment forms the most convenient introduction to the investigation of most cases.

Despite the very erroneous notion which many patients have of the true nature of their disease, this will often throw a flood of light upon the case at once, and, to the mind of the surgeon, render farther examination almost superfluous.

It is best, however, to take nothing for granted, but to proceed systematically even in the simplest cases, with a definite line of inquiries, as suggested by Allingham, so that no important symptom can escape notice.

No better scheme of questions has been devised than the following:

1. Is there pain?
   - Kind of pain—sharp, lancinating, burning, pulsating, gnawing, dull, paroxysmal, persistent, local, reflex.
   - Is it connected with the act of expulsion (tenesmus)?
   - Is it felt *after* defecation?
   - Is it relieved by defecation?
   - What is its duration?
   - Is it relieved at times?
2. What of the functional activity of the bowels?
   - Is there costiveness, or the reverse?
   - Is there stomach, intestinal or liver complaint?
   - Are the stools normal in color?
   - In consistence? In shape? In odor?
3. Is there a discharge from the rectum?
   - Is it mucous? Purulent? Bloody?
   - Is the hemorrhage abundant?
   - Is the blood fresh or coagulated?
   - Does it come during or after movements?
4. Is there during defecation or at any time a protrusion of the membranes?
   - Does this return spontaneously?
   - Can it be made to return?
   - Is this painful, itching, or bleeding?
5. Is there incontinence of fæces or urine?
6. Is there a history of tuberculosis? Syphilis?
7. What has been the patient's mode of life—active—sedentary—temperate—*etc.?*

The answers to these questions determine to some extent the direction of the *physical examination*, which is next in order, and which must modify or confirm the conclusions toward which the general symptoms point.

Position.—For operations and examinations requiring very complete access to the interior of the rectum the

lithotomy position is the most satisfactory. A gynæcological chair is more convenient than a table for this purpose. The knee-chest position upon a lounge or table offers certain advantages for inspecting the deeper portions of the rectum which cannot be obtained in any other manner. The lighting is also excellent in this posture, but the use of an anæsthetic of course is not possible.

Fig. 3.
Electric Lamp.

For most cases the Sim's position will be found most suitable, both in examining and operating. This is especially true in hemorrhoids, fissure, prolapse and such troubles as do not require deep exploration.

Light.—Abundant daylight should be had from an undraped window, or a powerful artificial light such as an argand burner or oil reading lamp placed on a stand in close proximity to the parts being examined. The tubular rectal specula require rather more light than those used in the vagina. About the same conditions are found here as in the use of the laryngoscope, and a similar condenser and hooded lamp are very useful. Darkening the room also assists very materially in their use. The best portable illuminator to be carried to all sorts of localities and residences is a coil of magnesian wire. This, when held in the flame of an oil lamp or a gas jet (a spirit lamp is better), gives a magnificent white light almost equal to direct sunshine in its blinding splendor. The beam may be reflected into the speculum by a plain or concave mirror, or thrown obliquely past the surgeon's shoulder directly into the opening. A plate or basin should be under the light to prevent the red-hot particles of magnesia from injuring the carpet or the bedding as they fall. A calcium light of course would be excellent, if one should happen to be accessible at the

place needed, but this could almost never be expected. In no class of work are the small incandescent electric lamps so useful as in examinations about the rectum. These can be held in the hand, and thrust into the deeper parts of the cavity, furnishing a powerful illumination which no reflector can give.

Small electric lamps of about one-half or one candle power are now furnished, for the use of surgeons and dentists. They are from the size of a pea upward and are usually mounted upon slender handles provided with a key for closing the circuit. From six to twelve Le Clanche cells costing about a dollar apiece furnish a battery which will operate such a lamp intermittently for a year without any attention.

External Inspection.—The first step in the physical examination for supposed rectal disease is a thorough inspection of the external parts. The most important signs of the presence of several common diseases are here visible.

Swelling, redness or tenderness should be carefully looked for in the tissues surrounding the anus, and the existence especially of any fistulous outlet determined at once.

The protrusion of hemorrhoids or prolapsus will also be noted. Hemorrhoids, usually, are not externally visible until forcibly extruded by an act similar to that of defecation. Many patients can do this at will, while in others the tumors cannot be determined by external inspection. External inspection will also show the presence of any redness, excoriation or ulceration of the parts about the anus or of discharges from the rectum. Fissure of the anus will often show a distinct sign of its presence by a little "sentinel pile" immediately below the fissure.

Other troubles such as ulceration and stricture of the rectum, or cancerous tumors above the anus require different modes of examination. In the progress of cancer of the rectum, the inguinal glands become enlarged before the tumor has attained a large growth.

Digital examination supplements the external inspection in certain cases and is in some respects more to be depended upon than internal inspection. For the detection of enlargement of the prostate, in strictures low down, and in testing the irritability of the sphincter, the finger is superior to all other instruments. The nail being made short and smooth, the finger is well lubricated, and gently insinuated through the orifice. Most surgeons prefer the index finger on account of its superior delicacy, but others like the middle digit, because of its greater length, though the superiority in length is more than lost by the interference of the adjacent knuckles. In using the index, the deepest touch is effected by putting the radial side of the hand toward the perineum, and letting the three unused fingers extend backward behind the sacrum; but in examining the prostate the middle finger is best with the palmer surface turned towards the pubis.

It is safer for the examiner to have the finger well anointed with some unguent which is both protective and antiseptic. Too much care cannot be exercised against poisoning the finger, as chancroidal and syphilitic ulcerations are not uncommon in and about the rectum. An incautious exposure of an abraded finger, or a "hang-nail," may give rise to very serious infection. Vaseline containing ten per cent. of boric acid, or five per cent. of carbolic acid, is useful for applying to the fingers and instruments. The latter causes a little temporary smarting when used freely upon the anal mucous membrane.

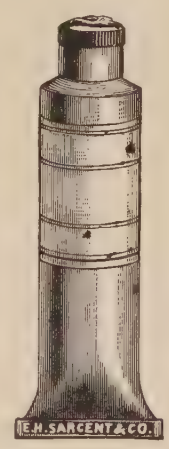

FIG. 4.—ASEPTIC VASELINE HOLDER.

To guard against possible infection of one patient from another it is well, in addition to the ordinary disinfection of hands and instruments, to keep the lubricant in collapsible tubes, which allow the escape of

such small quantities as are needed from time to time without risk of infecting the remainder.

When the lubricated finger-tip is pressed gently into the anus the resistance noticed will mark the amount of reflex irritability of the sphincters. In the normal anus this is slight, and will be felt only as feeble contraction, which is soon overcome. In diseased conditions the spasmodic resistance is sometimes very decided, and the introduction becomes painful and difficult. The state of the sphincter is an important part of the examination, and should always be noted.

Within the sphincter the finger finds the rectal walls in the normal state, smooth, elastic and distensible. The existence of stricture low down, of cancerous induration, or of inflammatory exudates, or œdema, can thus be determined. The finger which has become educated will readily detect any decided departure from the normal size in the prostate, and this should be noted carefully, as there occasionally seems to be an interdependence of bladder irritability and rectal disease.

As a further extension of examination by the sense of touch, recourse must be had to rectal sounds for the purpose of detecting obstructions in the deeper parts of the rectum.

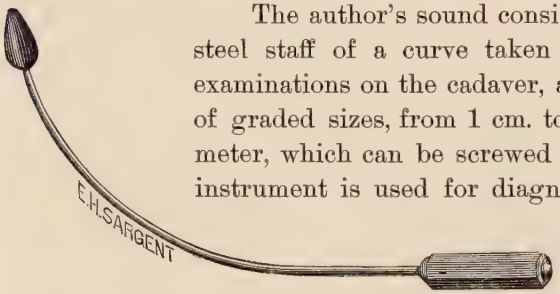

Fig. 5.—The Author's Rectal Sound.

The author's sound consists of a hollow steel staff of a curve taken from repeated examinations on the cadaver, and oval bulbs of graded sizes, from 1 cm. to 4 cm. in diameter, which can be screwed upon it. This instrument is used for diagnosis only. Its curve has proved so correct that it can readily pass the sigmoid flexure, and be felt through the abdominal wall without serious inconvenience to the patient. The handle, staff and bulbs are perforated for convenience in injecting through them.

Sounds must be used with great gentleness, as ulcerated spots in the intestine are sometimes exceedingly thin and may be ruptured. The easy passage of a large bulb proves the absence of stricture as far as it goes, but its arrest does not prove the existence of one. The upper rectum and lower colon have not only plications of membrane projecting into them, but the walls of the gut are liable to fold up over the end of an instrument, so that in deep sounding a mere arrest of progress does not prove the stricture.

The hand is sometimes introduced into the rectum for deep exploration. The operation, however, has sometimes caused death, and should only be resorted to when the emergency is such as justifies incurring some risk. The hand to be introduced should be small in circumference, well lubricated, and introduced very slowly and carefully, with the fingers gathered into the form of a cone. Of all exploratory instruments, the index finger is the one most frequently called for, but probes are necessary to trace fistulæ, and a grooved needle, an aspirator or a hypodermic syringe, may be wanted to detect abscesses.

Internal Inspection.—Speculums for the rectum have been multiplied until nearly every surgeon who has written upon rectal diseases, and many an ambitious "specialist" of provincial fame has invented one of his own to bear his name. The sharpers of the so-called "systems," which have had considerable patronage among the more gullible and poorly-qualified members of the profession, have each some cheap form of ironmongery which is a more or less successful imitation of a standard form of speculum.

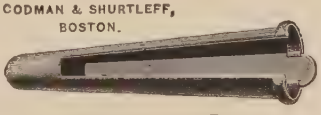

FIG. 6.—SPECULUM OF REMOVABLE SLIDE TYPE.

All of these instruments are copies of a few distinct types.

The simplest type is perhaps that of the straight tube. Tubular specula were very early employed for the rectum and were made both cylindrical, conical and sometimes

fenestrated. For examining the deep parts of the rectum a speculum in the form of a cylindrical tube, inserted by aid of a plug, is the best.

The author's tubular speculum is made in three sizes. The tube is five inches in length and made of thin polished metal, and the plug is of polished hard rubber. The light is thrown in by a concave mirror, and the membrane easily inspected in every part as it prolapses over the end of the tube during its withdrawal. If it is desired to inspect still deeper, we use a tube curved at its inner part. This being inserted follows the curve of the rectum, and the membrane prolapsing over the end is viewed by an oval mirror inserted on a staff, giving an inverted view, like the laryngoscope. The mirror is concave and gives a magnified view of the parts. The plan is modified from one

Fig. 7.—Author's Deep Tubular Speculum.

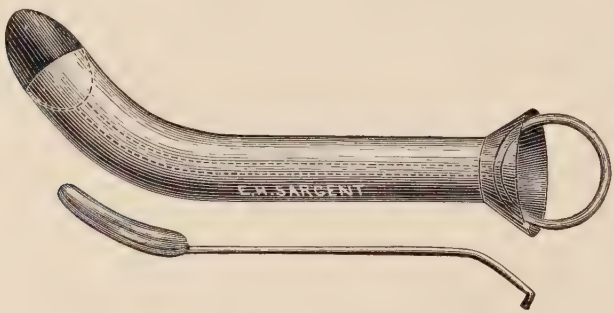

Fig. 8.—Author's Curved Rectal Speculum.

devised many years ago by Bodenhamer. This enables one to get a very deep view of the rectal walls. Still nine-tenths of practical rectal surgery lies within two inches of the verge of the anus, and the deeper instruments do not come to very frequent use.

When a critical inspection of every point on the rectal

walls is desired, there is nothing equal to a full-sized tubular speculum, even for parts near the outlet. We use a short one for that location, on account of the illumination being better, and the fact that with a short tube the membrane closing over the end can be viewed at widely varied angles. It must be borne in mind that nine-tenths of the lesions to be examined lie within an inch of the orifice, and hence the speculum oftenest used must show the latter, even if it fail on the deeper parts. Practically one needs at least two kinds, one short one to show the lower walls of the rectum either through the end or through lateral openings, and the other much longer and open only at the end, for the exploration of the remoter portions of the viscus. The long instrument is inserted deeply and then slowly withdrawn, showing successively every part of the membrane as it prolapses over the open extremity. Of the short instruments, one of the best is that of Allingham. It consists of a thin, metallic, trumpet-shaped shell, fitting closely to an ebony removable plug or core, which projects beyond the tip to facilitate insertion. A fenestrum or slot extends the whole length. The instru-

Fig. 9.
Author's Short Tubular Speculum.

Fig. 10.
Allingham's Speculum.

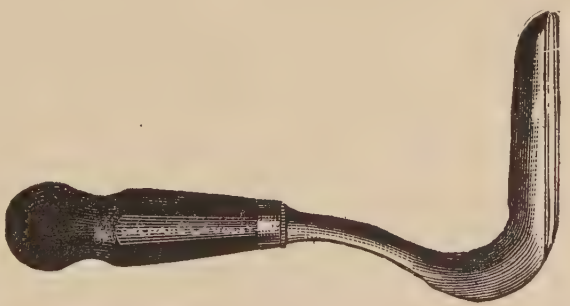

Fig. 11.—Van Buren's Speculum.

ment is inserted with the plug in, and the fenestrum on whatever side it is desired first to examine. The plug is then withdrawn and the membrane inspected; the plug is then re-inserted and the fenestrum turned in a new direction, when the plug is again withdrawn. The plug prevents the edges of the fenestrum from scraping the membranes painfully, and by several re-insertions of it the opening can be turned to every part of the rectal walls. The inner opening shows something of the membrane prolapsed over it, but the orifice of the tip is too small, and the instrument too short for efficiency in deep explorations. The present rectal itinerants generally use a small, tapering speculum, open at the tip, and having a plug to facilitate entrance. Like Allingham's, it is too short and too small for deep work, but as it has a lateral fenestrum, closed by a removable slide, most of the objects sought by that ignorant class can be brought into view by means of it.

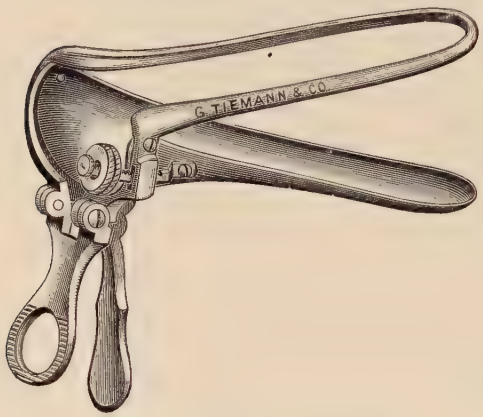

FIG. 12.—KELSEY'S SPECULUM.

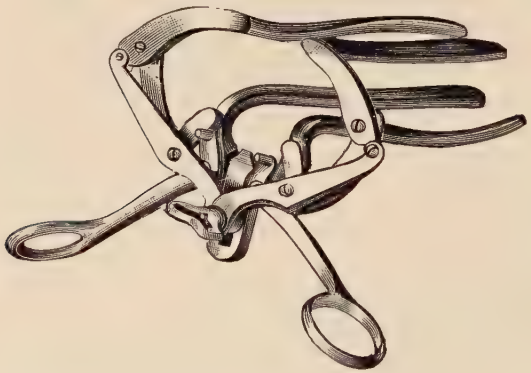

FIG. 13.—ALLINGHAM'S FOUR-BLADED SPECULUM.

Tubular specula, however, are solely for examination. One cannot use them in operating. A pair of Sims' specula set in handles is very convenient in many cases both for examination and for operations.

Dr. Kelsey, of New York, has devised a good bivalve speculum, which is, however, not equal for general use to the four-bladed speculum of Allingham.

Sets of Instruments for Rectal Surgery.—The diminutive cases of instruments sold at extravagant prices to itinerants and some unwary physicians are an illustration of the adage "knowledge is power," since the possession of so very little knowledge on the part of an ignorant vender enables him to extract one hundred dollars from the pocket of his still more ignorant patron for ten or fifteen dollars' worth of very simple appliances. Of late competition has brought down the prices of these sets somewhat and improved their quality. Chicago parties advertise outfits at from thirty to fifty dollars, which are not different from those which at first found a market at double those figures. Nevertheless the price charged is exorbitant, and the selection is meagre and wholly insufficient for any surgeon who wishes to treat all rectal diseases.

If a physician wishes, he can provide himself with a far better outfit at a much cheaper rate by ordering from any first-class instrument store one of the following sets:

SMALL RECTAL CASE.

1 Allingham's rectal speculum.
1 Scalpel.
1 Curved, sharp-pointed bistoury.
1 Curved, blunt-pointed bistoury.
1 Straight scissors.
1 Grooved director.
1 Silver probe.
1 Porte-caustique.
1 Small vulsellum pile forceps.
6 Curved needles (assorted sizes).

1 Tait's lock artery forceps.
1 Spool heavy ligature silk.

LARGE RECTAL CASE.

1 Allingham's rectal speculum.
1 Andrews' tubular rectal speculum.
2 Van Buren's specula.
1 Scalpel.
1 Curved, sharp-pointed bistoury.
1 Curved, blunt-pointed bistoury.
1 Straight scissors.
1 Small vulsellum pile forceps.
4 Tait's lock artery forceps.
1 Grooved director.
1 Silver probe.
1 Porte-caustique.
1 Double tenaculum.
1 Large laryngoscopic mirror.
½ Ounce magnesian wire for illumination.
1 Small spirit lamp.
6 Curved needles (assorted sizes).
1 Smith's clamp and cautery irons.
1 Hypodermic syringe.
1 Spool heavy white silk.
1 Hard rubber clyster syringe.
1 Curved rectal sound with six bulbs.

The small case will be furnished by most Chicago instrument dealers for about sixteen dollars, and the large one for about fifty dollars. If fewer or more instruments are required, the price will be lower or higher, in proportion. Even the smaller case is much better than those possessed by the itinerants.

CHAPTER III.

HÆMORRHOIDS, OR PILES.

Hæmorrhoids, in the strictest sense, are varicose hæmorrhoidal veins. However, the term as used in popular language has been loosely extended to include almost every small tumor about the anus, whether of varicose origin or not. Some centuries ago they were called "Emerods," and the disease appears under that name in King James' version of the Old Testament, where the Philistines are said to have been smitten with emerods, and to have made golden models of them as expiatory offerings.

Ætiology.—This disease has its origin in the fact that when the patient strains in defecation, the mucous membrane is more or less everted, and in that position the hæmorrhoidal veins have no support from surrounding parts, so that the straining, by forcing the blood downward, distends them into pouches, or varices. When the rectum is continually packed with retained fæces, the veins are compressed above the anus, and the return of blood being restricted, they become additionally distended by this obstacle, so that constipation is a leading cause of the disease. The contraction, or inflammatory obstruction of the "muscular button-holes" by which the superior veins emerge from the rectum is also supposed to be causes of their dilatation, and hence of piles.

Any obstruction of the portal vessels acts in the same way, hence diseases of the liver, large abdominal tumors and the pressure of the gravid uterus in pregnancy are common causes. When the inflammation of acute dysentery progresses downward to the vicinity of the anus, the veins are obstructed by inflammatory deposits around them, so that piles often appear in the later stages of that disease. Finally

sundry small nævoid tumors of the anus, as well as hypertrophied folds of the skin and mucous membrane, soft polypi, and lumps formed by clots of extravasated blood under the skin, are popularly classed as piles, though not properly varices.

In cases where the obstruction is temporary, recent hæmorrhoids may recover spontaneously; but if subjected to the continued action of the cause, they tend to enlarge and become more and more inflamed. At first they are troublesome only at intervals, but these "fits of piles" grow gradually longer and ultimately merge into each other so that the tumors become permanent. As the distended condition continues, the parts become inflamed, and the integument and the connective tissues around the veins become first swollen and then permanently hypertrophied, and protuberances which originated as mere venous pouches, become solid and firm fleshy tumors. Sometimes clots of blood form in the veins, obliterating them, and leading to their cure by atrophy. At other times the veins burst, forming globular clots in the connective tissue outside the vessels, and these, like all other lumps in this region, are generally termed piles. They sometimes give origin to suppuration and are discharged, but generally the clots are absorbed in the course of a few weeks. Frequently the enlarged veins burst during defecation and copious hæmorrhage occurs. Where this occurs daily, the patient may be brought to the verge of death from anæmia.

Piles are usually divided into internal and external forms. The internal are those which originate just above the verge of the anus, and are therefore covered with mucous membrane. They are primarily varices of the superior hæmorrhoidal veins, and probably may originate in distention of the little globose blood sacs, described in the chapter on Anatomy of the Rectum as being the starting points of the radicles of these veins. Indeed, there are those who doubt whether these sacs are anything more than incipient

internal hæmorrhoids, though there is respectable authority for their normal existence. (Duret.)

At first internal piles only appear when thrust down in defecation, and recede out of sight when the effort is over. As they grow larger they are gripped by the sphincter when down, and prevented from returning, causing much pain, and sometimes bursting under the muscular grasp of the sphincter, and free bleeding. The patient now learns to relieve his pain by pressing them in again with his fingers. At a still later stage they often become too large to remain in at all, and though still called internal piles they are now habitually external in position. At the verge of the anus, where the skin joins the mucous membrane the subcutaneous connective tissue is somewhat denser than above or below, binding the integument there closer to the inner edge of the external sphincter. This circle of denser tissue resists the distention of the veins at that line, so that we usually find the internal piles above separated by a narrow groove from the external piles below. However, the dense tissue does not always maintain its grip, and we often find internal and external piles running into each other with no groove to mark the boundary between them. In short, the same pile may be both internal and external. Physicians often speak of suspected internal piles high up in the rectum. This is an error. There are no internal piles so high up that they never show during defecation. They rarely occur more than an inch above the verge.

Fig. 14.
Internal and External Piles.

External piles are specially liable to become obliterated by thrombus, suppuration, etc., in which case they leave

sundry projecting tabs and folds of skin which are still called external piles, though no longer containing enlarged veins. Most of the temporary piles formed by extravasated clots are also in the external group.

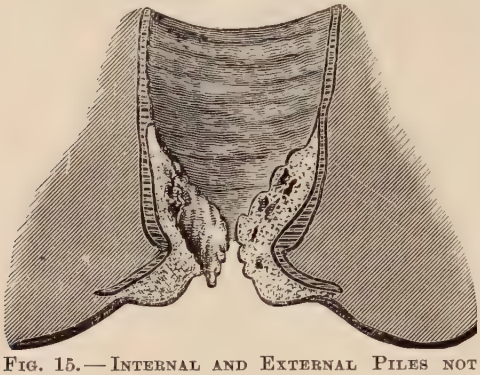

FIG. 15.—INTERNAL AND EXTERNAL PILES NOT CLEARLY SEPARABLE WITH A SMALL POLYPUS GROWING ON AN INTERNAL PILE.

Owing to the translucency of the mucous membrane internal hæmorrhoids show the color of the distended veins beneath, and are of a bluish purple color, while external piles approach more to a pink tint. When internal piles are found protruding, they generally present a rippled, irregular surface on account of the presence of the reticulated ridges of the columns of Morgagni, and of the sacculi Horneri among them. External piles on the contrary if distended are smoother in contour. The difference is well shown in Fig. 14, page 23.

The skin and mucous membrane covering piles near the verge of the anus are excessively sensitive, but the mucous membrane covering the upper portion of internal piles is nearly devoid of sensibility, a fact which should influence all our plans in operating.

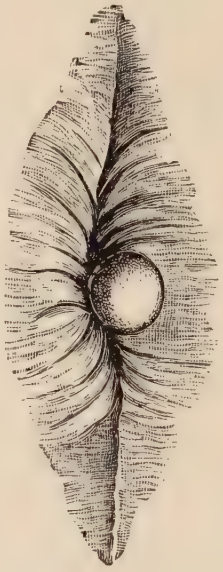

FIG. 16. — EXTERNAL PILE FORMED BY GLOBULED CLOT UNDER THE SKIN.—(*Smith.*)

Hæmorrhoidal tumors have a remarkable erectile power, not mentioned by most authors, and resembling that of the *corpus spongiosum* of the penis. This singular tendency enables

us to bring internal piles into view for examination or operation, by simply irritating them by a slightly rough handling with the finger. Under the touch they, in a few moments, erect themselves to their full size and are readily brought to view.

The treatment of hæmorrhoids is palliative or operative.

Palliative Treatment.—We have called the non-operative measures palliative, for in the majority of cases they fail to make a real cure, and only mitigate the suffering, yet it is true that in recent cases, where organic changes have not yet become established many hæmorrhoids return to a state of nearly perfect health under palliative treatment, so that we may say that in such cases they actually assist nature to effect a real cure.

One of the most important measures, is to combat constipation, because the pressure of the fecal mass compresses and obstructs the superior hæmorrhoidal veins, and thus distends them with blood and produces internal hæmorrhoids. Without occupying too much space with a topic familiar to every physician, suffice it to say that the mode of life, the diet, and the medicine are all regulated with a view to producing a gentle unirritating looseness of the bowels.

When full control of the patient can be had, it is well to place him for some days in a horizontal position, with a mild astringent wet compress bound against the anus. As defective action of the liver causes distention of the superior hæmorrhoidal veins, that organ should be regulated. Straining, or "bearing down" distends all the pelvic veins; hence the patient should be cautioned against all such efforts. Inflammation of the bladder often causes piles by inducing tenesmus and straining at the frequent micturitions; hence hæmorrhoids are common in cystitis, especially if a calculus exists in the bladder, and the cure of the urinary difficulty greatly relieves the rectal trouble.

Astringent ointments and washes with anodyne supposi-

tories are favorite palliatives. Tannin, alum, zinc sulphate, plumbic acetate, and carbolic acid may be used in almost any form and combination. The opiates, cocaine, hyoscyamus, belladonna, or atropine, iodoform and bismuth are favorites for suppositories. It should be remembered that all the astringents of the tannin group are incompatible with morphine, cocaine, and vegetable alkaloids and salts generally. The aim in the use of washes and ointments should be to get an astringent effect, but never an irritation, and the strength of the preparation should be calculated accordingly. Alum and tannin may be used in almost any strength, but sulphate of zinc and all caustics must be better guarded. The tissues tolerate from two to four times more of an article in the form of an ointment, than in a wash.

Compression bulbs have been invented to slip into the rectum, and gently compress and support internal piles, but are not very effective except in a few cases.

The application of decided caustics has been resorted to, such as brushing internal piles with strong nitric acid, or nitrate of silver, or chromic acid. Good is sometime done in this way, but mischief also may follow.

Operative Treatment by Stretching the Sphincter.—Perhaps the mildest operation upon internal or half internal piles is that employed by the French surgeons, Professor Verneuil and M. Fontan. It consists simply in making a rather slow and gentle, but complete and thorough, dilatation of both internal and external sphincters. This may be done by dilating instruments or by introducing gently through the sphincters two oiled fingers of each hand, and slowly pulling the sphincters in opposite directions until they are thoroughly stretched or dilated. An anæsthetic may be needed. Dilatation succeeds best in piles not already chronic. We have not fully tested the plan in our own practice, but French authorities claim that a large proportion of hæmorrhoids are radically cured by this manipulation. It may, therefore, be a desirable method, especially when the

patient is timid and cherishes a horror of ligatures and instruments. Yet it must be remembered that severe and long continued inflammation sometimes follows these forced dilatations, and in these cases they are by no means a mild measure.

Treatment by Ligature.—Probably the English and American surgeons have favored ligation for internal piles more than any other plan, on account of its comparative safety from hæmorrhage, embolism and abscesses. Dr. Allingham, of London, surgeon of St. Mark's Hospital for Rectal Diseases, has been the most conspicuous champion of the method, but König, of Göttingen, and many others on the continent, also favor it.

The application of the ligature renders hæmorrhage nearly impossible, and puts a very efficient barrier against the entrance of clots or septic material into the channels of the veins.

The use of the ligature for piles is very ancient. Hippocrates mentions it, and Celsus describes it. The success is excellent. When properly done, the cure is as near to absolute certainty as surgical operations ever attain, and the danger is a mere trifle. The mortality thus far ascertained is nearly as follows:

	CASES.	DEATHS.
Allingham's report of cases in St. Mark's Hospital up to 1859,	1,763	5
Allingham's report of cases in St. Mark's Hospital since 1858,	2,250	1
Allingham's report of cases in St. Mark's Hospital since previous report,	250	0
Allingham's private practice,	1,600	0
Total,	5,863	6

This is about one death in a thousand cases. It should be noted that five of these deaths occurred previous to 1859, when antiseptics were unknown and the hospitals of London were in a very unhealthy condition. Since that Allingham

reports 4,100 cases with only one death. The following authors have expressed their opinion in favor of ligation: Gross, Van Buren, Bodenhamer, Gowlland, Alfred Cooper, Curling, Quain, Ashton, Syme, Bushe, Copeland, Sir Benjamin Brodie, König, Frank Hamilton, Ashurst, Cripps, and many others.

Preparation of the Patient for Operation.—It is best to investigate the patient's whole condition, and rectify as perfectly as possible all diseased tendencies. Bright's disease of the kidneys adds greatly to the risk of all operations, and such cases are to be avoided if possible. Cripps refuses operations also in all cases of piles dependent on cystitis, but this is an error. When cystitis and piles coexist, each one powerfully aggravates the other, and the cure of the piles greatly assists the cure of the bladder. Many times the latter can never be cured until the piles are operated on. In malarious regions a full dose of quinine four times a day for forty-eight hours is a good preparation for the operation. The hair about the anus should be shaved off, and an antiseptic wash used there three times daily for two or three days. A good solution is carbolic acid, one part to fifty, or corrosive sublimate, one part to three thousand of water. On the day of operation the bowels should be well emptied by a cathartic, and the meal next preceding the operation should be omitted, so as to avoid vomiting during the anæsthesia.

When one or two small piles only are to be operated on, they can be anæsthetized sufficiently by clamping their bases and in that state injecting them with cocaine; but where the disease is extensive, ether is necessary. If the latter is used, the patient should strain down the piles, if possible, just before the operation, so as to bring them to view, and then go upon the table and be anæsthetized. After etherization, he may be placed in the position of lithotomy, or upon either side, with the knees drawn up, at the pleasure of the operator.

Most surgeons now forcibly dilate the sphincter, which excites the erectile action of the piles, and also opens the anus, thus bringing the tumors well into view. It is done by inserting one or two fingers of each hand into the anus, and gently but steadily drawing in opposite directions for three or four minutes. All rapid traction is to be guarded against, because there is danger of rupturing the tissues. It is not true, however, as some writers imply, that this dilatation is necessary. We can assert from many years of experience that ligation without forced dilatation is one of the most successful operations in surgery, so much so that it rarely fails to cure; sometimes it has seemed to us that when we have employed the dilatation, the patient has suffered severe pain and inflammation without any better final result. We doubt the wisdom of inflicting this added injury indiscriminately. In many cases the piles are sufficiently exposed already, and in most of the remainder a slightly rough handling of them with the finger and forceps, or tenaculum, causes the erection before described, and enables one to bring them well into view. The irritation of a forced dilatation may be avoided whenever it is unnecessary, yet, the parts just above the verge must be well searched, lest hidden piles escape notice and make future trouble.

We next consider the number and size of the piles, for if they occupy the whole verge of the anus, an absolutely complete removal of them down to their bases will make a circular wound completely surrounding the orifice, whose contraction in healing will cause a stricture of the anus,—a fact which many eminent authors strangely neglect to mention. It is necessary in all cases to save mucous membrane enough to constitute a soft and distensible verge to the anus. Hence, when the piles occupy the whole rim, we do not tie them close to their bases, but about half way between the base and summit, so as to leave some mucous membrane and skin between the tumors, and not included in the ligatures.

There need be no fear of failure on this account. Although the ligature takes off only half the height of each pile, the stumps, after swelling temporarily, always shrink down and become atrophied, leaving a perfect cure. Having considered thus where to place the ligatures, the surgeon seizes a pile with small vulsellum forceps, or a tenaculum, and draws it out. At this stage Allingham takes a pair of scissors, and commencing at the white line where the lower end of the mucous membrane covering the pile joins the skin, dissects it up from the sphincter some slight distance into the bowel, keeping close to the muscular coat. The wound does not bleed much, because the arteries of the pile enter it at its superior border. This incision severs the nerves of sensation, which enter from below, and makes the presence of the ligature less painful. However, when the piles constitute almost a continuous ridge around the anus, this plan cannot be adopted, as a ring-shaped wound and subsequent stricture will result.

Fig. 17.
Small Vulsellum Forceps for Piles.

This deep dissection also is not free from chances of hæmorrhage. Arteries sometimes take abnormal directions, and scissors also go at times a little deeper than was intended. Hence many surgeons prefer, after seizing the pile, to cut a little groove at the proper place, around the lower half of its circumference, simply going through the integument, so as to divide the cutaneous nerves, and thus blunt the sensibility and prevent the pain which would otherwise occur after the anæsthesia passes away. The ligature, which should be very strong, is tied in the groove made by the knife, and if the pile is large it should be tied three times around, as otherwise the yielding of the tissue under the pressure of the ligature is liable to slack its tightness and prevent complete strangulation. After tying the knots very securely it is best

to snip off the summit of each tumor, but not to cut so closely to the ligature as to risk the latter's slipping off. We prefer silk, hemp or linen threads. Catgut can be used, but it needs special care in tying, as under the softening effect of moisture it becomes slippery and is liable to yield, and permit hæmorrhage. Chromicized catgut is partly free from this danger. Many try to press the ligature stumps back into the bowel, but we are of the opinion that there is no use in that procedure. If they remain outside they can be kept well disinfected, and all bad odor and danger of septic infection prevented. The operation being finished the stumps should be washed with an antiseptic solution, dressed with iodol or iodoform and covered with a handful of antiseptic gauze held in position by a T bandage. Anodynes may be given as required, and it is well to give a hypodermic injection of morphine just before the operation. By a careful application of an eight per cent. solution of cocaine externally, or of a four per cent. solution by a hypodermic syringe under the skin and mucous membrane of the anus, many mild cases can be ligated with but little pain without any ether or chloroform, but care must be taken not to exceed a safe dose. A young surgeon in New York trying to operate under cocaine, and not getting full anæsthesia, yielded to the temptation to repeat the dose until he had injected eighteen grains into the tissue of the rectum, causing the death of the patient. Overcome with horror at the result of his error he then committed suicide.

Frequently the operation will be followed by a spasmodic contraction of the sphincter of the bladder, causing retention of urine, and compelling a resort to the catheter once or several times. The catheter may be tied in if necessary. Some surgeons try to prevent the spasm of the neck of the bladder by dilating it with a large urethral sound at the close of the operation. The treatment of the bowels is not agreed upon among surgeons. If they are

made to operate daily they cause a repetition of the painful movement. If they are restrained by opiates several days, as advised by Allingham, the fecal mass in the rectum becomes large, and hurts the more violently at last. The best way is to empty the bowels thoroughly before operating, and allow but little solid food for three days after. At the end of some two or three days after the operation give a mild cathartic, and at the same time soften the contents of the rectum by a warm injection. This will cause an evacuation with but little pain, and by similar means we can procure daily painless movements afterward, especially if the parts be well brushed with cocaine. On the whole we prefer the ligature to other operations in almost all internal hæmorrhoids, on account of the superior safety.

Treatment of Hæmorrhage after Operations in the Rectum.—All operations for piles are liable to a possible primary or secondary hæmorrhage, though the method by ligature is nearly safe from this accident. As the bleeding may take place inside the sphincter, a great quantity of blood may accumulate in the colon before it is observed. If hæmorrhage is discovered, or suspected, the bleeding point must be sought for, even if one has to forcibly dilate the anus and pull down the mucous membrane. The spot cannot be much above the verge. If it cannot be discovered Allingham ties a double string into the center of a large bell-shaped sponge, and pushes it up five inches above the bleeding point, so as to prevent the blood escaping upward into the colon. He then firmly packs the parts below with cotton dusted with powdered alum or iron persulphate, and leaves the tampon there a week or more. If the bleeding point can be found approximately, but not exactly, the whole adjacent patch of mucous membrane can be pinched up and tied *en masse*, or a double ligature may be passed under the spot by a curved needle and tied each way, thus enclosing the bleeding spot.

Slighter hæmorrhage may often be arrested by ice in

the rectum, or by astringent tampons, but severe cases require ligatures.

The Hypodermic Injection of Piles, or the Method of Itinerants.—In the year 1871 there lived in the village of Clinton, Illinois, a young physician named Mitchell. His practice was small, and afforded him superabundant leisure, which he employed in devising a new treatment for piles. Being a good thinker he soon conceived the idea of treating hæmorrhoids by the hypodermic injection of a mixture of olive oil and carbolic acid. Having tried his plan upon an old farmer of the neighborhood he accomplished a triumphant cure. The old farmer was delighted and garrulous, and the young doctor was needy but ambitious, and the two made a sort of copartnership, the old farmer attending to the advertising, while the young doctor received the patients and punctured their piles and their pockets with his hypodermic syringe. Knowledge of their method spread. Certain itinerants began to sell the secret to others, pledging them to secrecy in turn, and binding each to practice only in the district for which he had "purchased the right." Two men in Chicago are said to have paid three thousand dollars for the exclusive secret "right" to a certain portion of Illinois, including their city. Flocks of itinerants bought the secret of each other, and traversed the country in every direction until their handbills fluttered on the shores of the Pacific Ocean. In the year 1876 one of the quacks revealed to us his method, and by taking measures adapted to the purpose we found that his information was correct. We then entered into correspondence with a considerable number of the itinerants, some of whom seemed willing to make a clean breast. We also communicated with a large number of regular physicians who had observed the practice of the itinerants, and in some cases had made use of the method themselves. In the course of this investigation we received about 300 letters, and got rough estimates of the results of the injections in about 3,300 cases.

Mitchell commenced with a mixture of one part of carbolic acid to two parts of olive oil, but he gradually varied from his first method, and at length, as I am informed, he partly abandoned the injections and adopted the plan of tearing the interior of the piles to pieces by angular needles set in handles. He probably met some of the dangerous accidents which have occurred in the injection practice, and changed to the needles on that account. His disciples, however, persisted, and in their hands the injections were varied in numerous ways. One of the itinerants wrote us that he had tested "every caustic in the vegetable and mineral kingdoms," but that he came back to carbolic acid as the best, "and the stronger the better."

The excipients generally used were oil, glycerine or alcohol, to which water was sometimes added. Carbolic acid was generally but not always the active ingredient and the strength varied from twenty to one hundred per cent. We were disappointed on the whole in the results. Although there were many beautiful cures, thirteen deaths were reported to us out of about 3,304 cases, besides a large number of dangerous abscesses, sloughings, and in some cases prolonged and terrible pain, or desperate shock, the latter being probably from embolism. In a number of cases very dangerous hæmorrhages occurred, presumed to be from the spasmodic grip of the sphincter bursting the thin walls of a pile, squeezing out the clot, and letting loose the floodgates of the hæmorrhoidal veins, which above the verge have no valves.

It is an old experience over again. Twenty years ago the profession was charmed by the results of coagulating injections thrown into venous enlargements in other parts of the body, but we were soon stopped by the occurrence of deaths from embolism. The hypodermic injection of piles confronts us with similar dangers.

The following accidents have been reported to us out of about 3,304 cases: Deaths, 13; embolism of liver, 8; sudden

and dangerous prostration, 1; abscess of liver, 1; dangerous hæmorrhage, 10; permanent impotence, 1; stricture of the rectum, 2; violent pain, 83; carbolic acid poisoning, 1; failed to cure, 19; severe inflammation, 10; sloughing and other accidents, 35.

We are the more particular to mention these disasters, because Dr. C. B. Kelsey, of New York, has recently tried the plan and states that he has never heard of a death from it. Our experience in the West is very different. Twelve years ago we published nine of these deaths in an article which was extensively republished in the medical journals of this country and of Europe, and about four more fatal cases have come to our knowledge since. Dr. Kelsey, like one of the present writers, was at first highly pleased with his results, but with his usual sound judgment and candor he observes that further experience developed so many instances of abscesses, sloughing, etc., etc., that he has modified his first conclusions, and now applies the plan mainly to selected cases of completely internal piles of moderate size, and having well defined pedicles. (Kelsey on the Treatment of Hæmorrhoids, p. 64.)

For ourselves, we were long ago reluctantly compelled to admit that these injections are dangerous, and until some way of avoiding the perils is shown we can not recommend them except in special and selected cases.

The itinerants varied greatly the strength of the fluids used. The weak solutions acted more mildly than the others, but they often failed of cure. The strong preparations almost always cured the piles, but they produced a multitude of cases of abscesses and sloughings. The Michigan itinerant above mentioned states that he preferred positive results, and always sought to cause the piles to suppurate or mortify, and to that end he "preferred carbolic acid, and the stronger the better." Some of them use the acid at a strength of only three per cent. and others as high as 95 per cent.

The secret pile remedy of the "Brinkerhoff System," is the following:

Carbolic Acid	℥j
Olive Oil	℥v
Chloride of Zinc	grs. viij

Mix.

The little pamphlet furnished to the itinerants purchasing the "System" directs that the amount of injection inserted into the tumors shall be as follows:

Largest Piles	8 minims
Medium "	4 to 8 "
Small "	2 to 3 "
Club-shaped painless piles near orifice	2 "

"Brinkerhoff's System" forbids the injection of any but internal piles. He directs hot sitz-baths for cases where violent pain follows. His prohibition against the injection of the external kind, is doubtless because of the agonizing distress apt to follow in the latter, owing to their great supply of sensory nerves. He directs to treat only one large, or two small piles at a sitting, and to allow from two to four weeks between the operations.

Some add ergot, and others cocaine to their injections. The itinerants have used a great variety of coagulating substances besides carbolic acid, such as iron persulphate, iron perchloride, zinc sulphate, zinc chloride, mineral acids, tannic acid, etc., but on the whole carbolic acid mixtures have received the preference. The dangers have generally arisen from embolism, hæmorrhage, abscesses and septicæmia. The lower portion of the hæmorrhoidal plexus empties into the iliac veins, and the upper into portal system; hence clots or globules of the injection may be carried either to the heart or to the liver. Dr. Whitmire, a well-known physician of high standing at Metamora, Ill., tampons the rectum for twenty-four hours after the injection to prevent the clots from moving upward. In case of hæmorrhage, Allingham's

method of tamponing, as described on page 32, can be employed.

Up to the present time science has not discovered any method of wholly avoiding the risks of the hypodermic injections. The method is moderately, but positively dangerous, and we cannot recommend it as proper in ordinary cases.

If the injection plan is resorted to at all the following rules should guide us:

1. Unless cocaine is used, inject only internal piles, as those have much less susceptibility to pain than the external ones; however, if an external pile be injected a few minutes beforehand with cocaine, the pain can be in a great measure prevented.

2. Use diluted forms of the injection first, and stronger ones only when these fail.

3. Inject only one or two piles at a time, and allow from ten to thirty days between the operations.

4. Apply cosmoline to the surface to protect it from possible dripping during the operation, and keep the syringe in a few moments to prevent the mixture from flowing out. Inject slowly.

5. Confine the patient to the bed the first day.

Treatment of Hæmorrhoids by the Clamp and Cautery.—Von Langenbeck, of Berlin, and Smith, of London, are the chief advocates of this operation, but Mr. Cusacle, of Dublin, is said to be the inventor of it. The operator seizes the pile with a double tenaculum or with a small vulsellum forceps and draws it out. He then applies to its base the clamp shown in Fig. 18, so as to prevent hæmorrhage and protect the parts beneath from the cautery instruments. Smith then cuts off the piles outside the clamp with hot serrated cautery knives, while others simply use the scissors. In either case the tissue is not divided close to the clamp, but about a quarter or third of an inch external to it. The projecting stump is now thoroughly but slowly cauterized by

irons at a black heat, so applied as not merely to sear the cut surface, but to thoroughly "cook" the whole projecting stump well up to the clamp. The electro-cautery can be used instead of hot irons.

The method effectually cures the piles, but it is a little more liable to hæmorrhage than the ligature, and the idea of burning the parts with hot irons is horrifying to the imagination of the patient and his friends, hence the clamp has had less favor than the ligature, though many excellent surgeons employ it. The after-treatment is the same as that after ligation.

FIG. 18.—SMITH'S CAUTERY CLAMP.

Treatment of Hæmorrhoids by the Ecraseur.—Many French surgeons formerly favored the removal of piles by the chain écraseur. We have often used for the purpose the écraseur forceps here shown (Fig. 19) which are of our own devising, though by an accident they are credited in the instrumental catalogues to Professor Byford. The error was not due to him, as he never laid any claim to the invention.

The instrument is easily cleaned, simple in structure, and much more easily applied than the complicated chain écraseur, and does not break like the wire écraseur. The effect on the pile is exactly the same as that of the others, neither better nor worse. Smith, of London, has devised

a small pile écraseur (Fig. 20), using a wire cable instead of a chain.

The pile being seized with vulsellum forceps, the instrument is applied at the same point where a ligature would be, generally half way between the base and the summit, and slowly tightened until the tissues are severed. The patient must be kept some days in bed, the stumps are treated antiseptically, and the general management is the same as after ligature. As in all other methods of removing piles, it is necessary to be careful and leave sufficient mucous membrane to make a distensible verge of the anus, otherwise a stricture will follow.

The écraseur cures piles effectually, but it is occasionally followed by dangerous hæmorrhage, so that its popularity in this country has decidedly waned. In our own practice we have discarded its use.

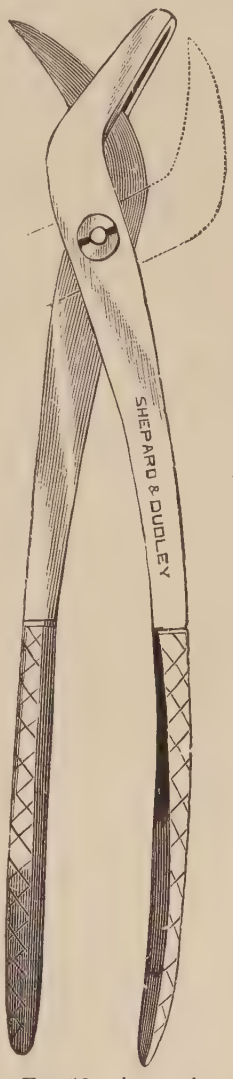

FIG. 19.—AUTHOR'S ECRASEUR-FORCEPS.

Crushing the Pile.—Another method consists in crushing the pile with an instrument devised for the purpose, without removing it. This merely diminishes the danger of hæmorrhage without attaining the safety of ligation. It, however, destroys the pile, and causes it to slough off, thus effecting a cure. It has been considerably but not generally employed. It is a more severe operation than ligation and has no advantage over other methods in its results.

Various Cauteries.—Hot irons of various forms have

been applied to piles with the effect of curing the tumors. Cautery by needles, either heated by a spirit lamp or by the galvanic current, has been a favorite with some. Electricity in a weaker current is also used to coagulate the blood in the piles with considerable effect.

Potential cautery has been practiced on internal hæmorrhoids with fuming nitric acid, with sodium ethylate, and with *potassa cum calce*. Many successes and many failures have resulted from the use of these inconvenient articles.

Treatment of External Piles.—External hæmorrhoids may be excised, ligated, or destroyed by cautery. When they consist, however, of globular subcutaneous blood clots, operation is unnecessary because they will be absorbed in a

FIG. 20.—SMITH'S WIRE CABLE ECRASEUR.

few weeks or months. If painful they may be slit up and the clots turned out.

Excision of Internal Piles.—A few authors have lately advocated a partial return to the discarded plan of cutting out internal as well as external piles, resorting to one or another method of preventing hæmorrhage, according to the fancy or the judgment of the writer. We are sorry to say that none of these plans are safe. One may operate a hundred times and have no trouble, but sooner or later the surgeon who cuts out large numbers of internal piles will have instances of dangerous hæmorrhage. If the incision were external, where unskilled attendants could apply compression, it would be less objectionable, but the bleeding point is above the sphincter, and the patient bleeds a colonfull before he knows the cause of his faintness. He then

expels a great mass of clots, and the sphincter closes, stopping the external flow and deceiving the patient with a false appearance of improvement, until another mass is expelled, and so on through a perilous series of refillings and expulsions. If the surgeon who operated happens to be inaccessible, or not to be found, the patient will be in great danger, for, even if some well-educated physician not in surgical practice is called, he will often be baffled and perplexed to control a bleeding from an internal point, whose exact location is very obscure to him.

For the method of arresting rectal hæmorrhage the reader is referred to page 32.

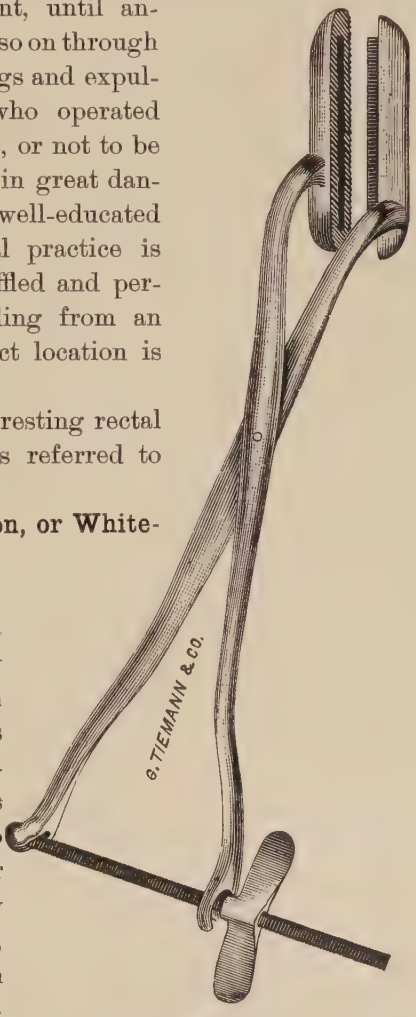

Fig. 21.—Nott's Ecraseur.

The Circular Excision, or Whitehead's Operation. — Mr. Whitehead, of England, published in the *British Medical Journal* nearly five years ago a new plan of operation, which was very energetic, but involved some dangers, and was not therefore acceptable to most surgeons. Professor Robt. F. Weir, of New York, tried it, however, but soon abandoned it on account of its obvious defects. Mr. Whitehead himself became dissatisfied with his method and in February, 1887, published in the *British Medical Journal* a modification of the plan, and claimed complete success in three

hundred consecutive cases without a single death, secondary hæmorrhage, abscess, ulceration, stricture or incontinence of the fæces. Notwithstanding these brilliant claims the method is liable to several objections, so much so that we have declined thus far to use it, but Prof. Weir, after trying it six times, announces his approval of it.

Mr. Whitehead's improved procedure is as follows:

The sphincters are first forcibly stretched. Next the surgeon with dissecting forceps picks up the integument near the junction of the skin and mucous membrane and with scissors cuts through the mucous membrane at or pretty near the white line indicating its junction with the skin, making a rapid incision entirely around the bowel and upward until the upper edge of the external sphincter and the lower edge of the internal one are exposed to view. The dissection is then carried upward along the inner surface of the internal sphincter separating the piles and mucous membrane from the muscle, pulling the piles downward a little firmly and snipping any resisting bands of tissue, but using the fingers and handle of the scalpel as far as possible to peel the piles away from the muscle until the healthy membrane above the piles is reached. The mucous membrane, now hanging loose in the rectum with the piles attached, is divided transversely, cutting only a moderate portion of it at a time, and securing the bleeding vessels by torsion and not by ligatures. As soon as the vessels of a section are secured, that portion of the cut edge of the mucous membrane is dusted with iodoform and pulled down and fastened by fine silk sutures to the cut edge of integument at the verge. The stitches are never removed but allowed to fall out spontaneously. Another portion of the circumference is then cut, and secured in the same manner and so on until the whole of the circumference is divided, and the circle of mucous membrane which naturally lined the lower part of the rectum is taken away, and the membrane higher up pulled down to take its place. Prof. Weir

thinks the subsequent pain is less than after Allingham's ligation, but it is difficult to see why, since the most exquisitely sensitive portion of the integument at the verge of the anus is pinched up in a circle of numerous fine stitches, while its sensory nerve supply is not cut off as in Allingham's method. Prof. Weir's six cases are perhaps not enough to settle this question.

At this distance we are not able to ascertain whether there are any mistakes in Mr. Whitehead's enthusiastic claim to entire exemption from the accidents known to be common elsewhere after excision of internal piles, but we think caution should be for the present observed. In the United States some very disastrous results have followed the operation. Prof. Weir facilitates the separation of the piles and mucous membrane from the internal sphincter by dissecting to the upper limit at one spot first, and then with the nail or blunt point of the scissors peeling around in a circular direction. Allingham recognizes some of the objections to the method, but has tried it and even invented a complicated four-armed forceps to hold the mucous membrane during the dissection. He diminishes the risk of hæmorrhage by passing a needle and ligature through the cut edge of the skin and through the mucous membrane from the external side above each principal pile and thence around the base of the pile and down through the skin again, and tightens it, thus clamping the artery of each principal pile to the skin by the knot, and compressing its nutrient artery.

The objections which will occur to every one are these:

1. There is a great difference in patients about the liability of arteries closed by torsion to untwist their fibres under the arterial blood pressure, and resume hæmorrhage. If this occurs, the row of fine stitches set in a tender mucous membrane is not adequate resistance against the force of arterial blood. Hæmorrhage will not be common, but according to general experience in other operations at this part,

it seems nearly incredible that it should not sometimes occur.

2. According to the experience both of Prof. Weir and of Mr. Whitehead, union by first intention will not always take place, and if it does not, a circular ulcer, and, after it, a contracting circle of cicatrix will surround the orifice. In such cases it is impossible to see why stricture may not occasionally occur, precisely as it does sometimes where a surgeon incautiously removes in other operations a complete zone of mucous membrane at the same place.

All things considered, it is an operation of great severity, and some danger, and ought not to be performed except in a few peculiar cases, since safer and milder methods have almost a perfect certainty of success.

CHAPTER IV.

PROCTITIS OR INFLAMMATION OF THE RECTUM.

Proctitis or inflammation limited to the rectum is as distinctly a clinical entity as colitis, typhilitis, duodenitis or any localized affection of the intestinal tube. It deserves to be considered entirely apart from periproctitis or cellulitis, with which it has little in common.

Causes.—Mechanical irritation is often the direct cause of an inflamed condition of the lower bowel. After wounds and contusions there is apt to be slight muco-purulent discharge and some degree of tenesmus lasting for a few days. This is equally true of operations, particularly the removal of hæmorrhoids and forcible dilatation. When the sphincter has been forcibly dilated an increased sensitiveness of the organ almost always follows for a certain length of time, so that whatever material has descended to within a short distance of the anus is likely to be evacuated suddenly.

To this is probably due the fact that forced dilatation of the sphincter is reputed to have a powerful influence in curing chronic constipation.

Foreign bodies are not very rarely introduced into the rectum by accident or design. Children and persons of perverted instincts frequently thrust objects of considerable size into the anus. When from their shape or size these cannot be expelled in the natural motions great irritation is likely to ensue, sooner or later leading to perforation of the bowel and periproctitis. Improper or too frequent use of syringes may also cause considerable proctitis. When the fæces contain angular or sharp-pointed objects the rectum is

more likely to suffer laceration than the bowel higher up because of the indurated and inspissated character of the material which must cause such objects to be pressed more strongly in contact with the membranes. Such objects are fishbones, nut-shells and occasionally even coins, pins and needles which have been swallowed. Certain kinds of food which undergo putrefactive changes frequently cause slight transient catarrh of the rectum. Among such articles are Brie and Limburger cheese and game too long kept.

The influence of cold is occasionally felt in producing slight irritations here as in other mucous membranes.

In parturition there is sometimes transient acute proctitis. It may also result from the presence of oxyurides.

Among prostitutes the practice of sodomy is a frequent cause of proctitis apart from the effect of contagion. The sphincter also becomes relaxed or torn. Gonorrhœal and syphilitic proctitis are, however, not generally the effects of sodomy but of infection from other parts, or of constitutional disease. Women, as is well known, are the usual victims of gonorrhœa of the rectum.

Diphtheria of the rectum as described by Trousseau is certainly a form of proctitis rarely noticed in America. It does not occur as a primary affection but in conjunction with the same disease in the throat and only in cases of severe general poisoning.

Tuberculosis of the rectum has not so much to do with proctitis as with periproctitis and fistula in ano. Another condition favorable to the production of proctitis is a hæmorrhoidal condition of the rectal wall. Verneuil has called attention to the fact that the veins of the rectum in their upward course penetrate the muscular layer in such a way that they are constricted with each contraction of the bowel. Stasis of blood and engorgement of the vessels are thus brought about with each act of defecation. A condition is set up not unlike that seen in varicosities of the lower limbs, predisposing to œdema and indolent ulceration of the mem-

brane. This has been termed by Rokitansky "hæmorrhoidal ulceration."

Dysentery is commonly associated with some proctitis. Many cases of chronic inflammation and ulceration of the lower bowel are due to this cause, especially in hot climates.

Amyloid disease of the kidneys is sometimes responsible for inflammation and degenerative changes in the mucous membrane. Bartels assigns as the cause of this the degeneration of the blood vessels in the lining membrane.

Follicular disease of the mucous membrane is another cause of proctitis. The scattered glands of the large intestine become inflamed, enlarged and finally suppurate, discharging each a sphacelus and leaving small rounded ulcers upon the membrane. It is uncertain whether these should be considered as a cause or as an effect of catarrhal inflammation.

Symptoms.—Acute proctitis gives rise to symptoms not wholly unlike those of dysentery. It is now held that the rectum, even in health, does not act as a receptacle for any length of time, but tends normally to expel its contents very shortly after they are received. In proctitis this tendency is very markedly increased and exaggerated. While there may be no true diarrhœa, the fæces and gases are expelled spasmodically almost as soon as they reach the rectal pouch. This may occur without the patient's consciousness, but more often it is accompanied by slight tenesmus like that of dysentery.

An increased secretion of mucous is another symptom of acute proctitis. This may be clear or streaked with blood, sometimes it is expelled in small gelatinous masses apart from defecation. More or less irritation of the skin about the anus often exists as a result of the irritating discharges. This is much more likely to occur in the gonorrhœal form.

Swelling of the mucous and submucous tissue is usually present, but there is not much local pain except the tenesmus during defecation. The œdema often causes some

protrusion of the swollen membranes, a condition described by Roser as "ectropion recti."

Accompanying all forms of proctitis there may be more or less irritability of the prostate or bladder and an increased frequency of urination.

Gonorrhœal proctitis differs little in its general features from gonorrhœa elsewhere. Large quantities of muco-pus are discharged during the height of the inflammation, which usually lasts from two to four weeks. Microscopic examination will show the presence of the characteristic microbe or gonococcus (Klein).

Bumstead and Taylor and Neumann have proved that chancroids within the rectum are not by any means unusual. This must nearly always be the result of sodomy rather than of auto-infection, although the latter is possible, as by the insertion of an infected finger or syringe within the rectum. In Neumann's clinic a very clearly marked case of chancroidal ulcer well above the sphincter was observed and described in 1881. The patient admitted the practice of sodomy.

True chancres of the rectum and anus would hardly be noticed by the patient. Fournier has proved their frequent occurrence both within and outside of the rectum.

Condylomata are the most familiar of all syphilitic manifestations about the rectum. They are essentially like mucous patches or papules occurring elsewhere in secondary syphilis but owe their peculiar form to the irritation to which they are constantly subjected. At times they take on almost the appearance of warts or vegetations. In the folds of the mucous membrane of the anus where there are mucous patches, there is often a tendency to the formation of small rounded ulcers with sharply elevated edges (*rhagades*). The subsequent healing and contraction of these ulcers produce a curious folding and wrinkling of the skin, described by Sir James Paget as a true characteristic of syphilis of the rectum.

Another form of syphilitic proctitis is often met in which there is a diffused thickening of the whole rectal wall, causing it to become harder than natural and somewhat œdematous. Fournier describes this condition—under the name *ano rectal syphiloma*—as a hyperplasia followed by sclerosis of the membranes so that they ultimately become contracted and fibrous.

Tertiary syphilis of the rectum begins by the deposit of gummata upon the membrane in the form of smooth, globular, painless tumors. These run the usual course of such deposits, breaking down and producing rounded ulcers which coalesce and destroy the mucous and submucous tissue. The healing of these ulcers if extensive inevitably brings on stricture of the rectum. There is little doubt that tertiary syphilis of the rectum is very common. That it is not oftener seen in its earlier stages is due to the painless character of the affection and its remote location. Accompanying ulcerative proctitis, of a syphilitic or any form, there is of course some mucous and purulent discharge, which, however, may not attract much attention.

There is not infrequently amyloid degeneration of the rectal wall in advanced syphilis. This results from a similar condition of the intestine above. Allingham applies the term "lupoid" or "rodent" ulceration to what is probably identical with lupus in other parts of the body, though occurring often in persons not in advanced years. Some cases of extreme destruction have been observed from this disease in which the rectum was extensively undermined and the bowel left "hanging loose and ragged" "like the torn sleeve of a coat."

Treatment of Proctitis.—Acute proctitis is commonly a transient affection when due to extension from the same condition higher up and calls for no separate treatment.

When due to mechanical irritation, local interference except to remove foreign substances is often unnecessary, the inflammation subsiding quite rapidly when rest in bed

is maintained. The local use of anodynes and antiseptics in the form of suppositories is often to be recommended, however. To ensure rest the bowel should be kept evacuated. A recent British writer advises against enemata for this purpose on account of the danger of spreading infection upward. This danger can only exist in special cases. Small injections of hot water are decidedly soothing and help to control the inflammation, at the same time cleansing the rectum.

For tenesmus it is well to use

Mucilage of starch.....℥ij
Tr. opii.....x-xxx

Inject slowly.

An anodyne antiseptic of great value is

Iodoform.....℈i
Ext. belladon.....gr. v
Pulv. opii.....gr. x
Ol. theobrom.....q.s.
M. Ft. Suppositories No. xii

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Boric and carbolic acid are slightly irritating and cause some smarting of the anus. Corrosive sublimate is not a suitable antiseptic for use within the rectum on account of its irritating properties not less than its poisonous properties when absorbed.

Chronic proctitis is best treated by the free use of hot water to cleanse and soothe the congested membrane. The hot douche is also advised after certain injections to remove them and prevent their absorption.

Thus, for chronic proctitis

Argent. nit.....gr. v.
Aq. dest.....℥ij

may be injected and removed by a subsequent enema.

While the local effect of this solution ought to be favorable, its immediate removal probably prevents any decided action. Neither are we inclined to recommend for general

use within the rectum any solution which safety requires should be washed out again. It is not always possible to know how far injections are carried and whether they are subsequently removed or not by washing with additional water.

The following by Ball is of use where the discharges are fetid:

Liq. carbonis detergent.....℥ii
Tr. krameriæ..... ....℥iv
Mucil. amyli.....*q. s. ad* ℥iv
M. Liq. Inject ℥i morning and night.

A solution of bismuth with mucilage of starch is recommended as a safe local application, *viz:*

Liq. bismuth.....℥i
Mucil. amyli.....℥vi

It is well to remember that glycerine if used freely in the rectum will of itself be decidedly irritating. Mucilage of starch is therefore better than any preparation such as "glycerite of starch."

CHAPTER V.

DISEASES OF THE SACCULI HORNERI.

Fortunately the sacculi are not very prone to disease, except as they participate in inflammations of adjacent parts. Still they occasionally give lodgment to small foreign bodies, which may cause ulcers of a septic character, and which by their location close to the zone of greatest nervous supply of the rectum may give origin to extensive and distressing reflex symptoms, even in distant parts of the body.

At the present time special attention has been directed to the sacculi by the traveling "pile doctors" who have gotten the idea that the sacculi, or "pockets" as they commonly call them, are never healthy, but are themselves a disease in their very nature, and that they must always be destroyed. As the patient cannot see the sacculi and is unable to deny their diseased nature, he is at the mercy of the traveling man and gladly pays a high fee to have such dangerous organs split open and destroyed. The sacculi are described in Chapter I., but we may be allowed to refer again briefly to them, since noisy itinerants are making use of them so extensively in their trade and doing injury to thousands of deluded patients.

The anatomy of the organs referred to is given by various authors, both old and new, and we have been at the trouble to verify their descriptions and drawings, by new dissections of our own, assisted by Prof. Billings, of the Chicago Medical College. In a healthy rectum the mucous membrane just above the verge of the anus is traversed by minute branching ridges, enclosing slight concavities of varied shapes and sizes. If a healthy rectum from a cadaver

be laid open and spread out after the rigor mortis is past, the ridges will be found to curve and interlace in all directions and to be only faintly visible, but if examined during life it will be seen that the action of the *sphincter ani* presses them together laterally, so that the ridges run in a more perpendicular direction, and receive the name of *columnæ recti.* The framework of these little ridges does not consist of mere folds of mucous membrane, as some authors state. They are reticulate bands of muscular and connective tissue, and the delicate mucous membrane, when healthy, can be made to glide freely over them.

These little columns are inserted at their lower extremities into the verge of the anus, and at that point one is often connected to its nearest fellows by webs of mucous membrane, making the "pockets" above mentioned, which were long ago named the *sacculi Horneri*, by anatomists, after the distinguished Dr. Horner. They are figured by various authors, and good illustrations may be seen in Smith's Anatom. Atlas, fig. 331, page 112; Esmarch's recent work on the Rectum, and in Allen's Anatomy, plate 101. They are much less distinct in some persons than in others, but in all perfectly healthy rectums, where the mucous membrane is normally thin and elastic, the lower ends of the grooves between the columns will show hollows, which sometimes are of considerable depth, but, even if shallow, a little traction with a blunt hook readily makes them assume the form of sacculi or "pockets," well adapted to deceive an examiner who is not aware of the elasticity of the membrane. In perfectly sound rectums the membrane covering the reticulated ridges and lining the hollows is exceedingly elastic and distensible, to allow of the requisite dilatation during the expulsion of the fæcal mass. The sacculi and other hollows of the reticulated zone contain a reserve of tenaceous mucus, which is pressed out as the fæces descend, and lubricates the descending mass. When carefully examined in healthy organs, the sacculi show no

trace of disease, but are lined with a perfectly normal and beautifully delicate mucous membrane, which moves freely on the parts beneath, and stretches readily in any direction. The claim that they are "diseases" is simply absurd. However, these reservoirs of mucus, like the analagous pockets in the tonsils, occasionally become inflamed and even ulcerated, and then may require clipping out, as was long ago stated by Henry H. Smith, of Philadelphia, as well as by the elder Gross, and by Ashhurst and others. Berry seeds and other minute objects occasionally, but not often, lodge in them.

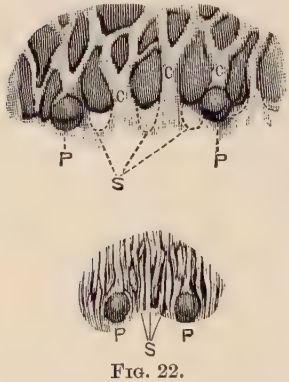

FIG. 22.

Magnified 3 diameters, from dissections by the authors. The upper cut shows the reticulated arrangement under post-mortem relaxation. The lower cut shows the same parts compressed laterally by the contraction of the sphincter. C. C. C. Columnæ recti. S. Dotted curves, showing the position of *sacculi Horneri* between the bases of the columns. P. P. Papillæ.

Between the lower ends of the grooves are frequently found a few papillæ, reminding one of the analogous *carunculæ myrtiformes* of the vagina, though they are usually smaller. They show a healthy structure in most cases, and are supposed to be tactile organs, whose nerves communicate reflex impulses to the expulsory muscles engaged in defecation. These little papillæ with the adjacent "pockets" constitute an important part of the harvest field of the itinerants.

The following letter, from the distinguished Prof. Henry H. Smith, of Philadelphia, shows the error of the claim that the so-called "pockets" are a new thing in science:

PHILADELPHIA, May 4, 1887.

Prof. E. Andrews:

DEAR SIR: "The rectal pouches" ("Sacculi Horneri") are a *normal* structure, intended to hold mucus, which is forced out in defecation, to lubricate the margin of the anus, and protect it from hardened fæces. In 1792 Physick called attention to them

(see American Encyclop. of Med. and Surg'y, article "Anus," by Coates; see also Smith's Operat'e Surg., Vol. II., p. 590, 1863), for the operation sometimes required. For their structure, see Horner's Special Anatomy, Vol. II., p. 46, 1851; see, also, American Jour. Med. Science, Vol. XVII., N. S., p. 410, 1849; Winslow (Vol. II., p. 149) described these pouches in 1749. In "Smith's Anatomical Atlas," published in 1844, by Lea, you will find in figure 331, page 112, an accurate drawing of the "Sacculi Horneri," which I guarantee to be correct.

"Truly yours,

"HENRY H. SMITH."

The rise and progress of the itinerant is usually this: He buys for fifty or a hundred dollars from the owner of one of the "Systems of Rectal Surgery" a little poverty-stricken box of instruments, containing a speculum, a blunt hook, a hypodermic syringe, and a few other things. The box also contains a little pamphlet telling him how to use the instruments on piles, "pockets," fistulæ, and ulcers. With the box he receives a mixture of carbolic acid, some salves, washes, etc., with the gracious privilege of buying more of them at a tremendous price of the owner of the "System" when the stock is exhausted. He is not always allowed to know their composition.

Inserting his speculum into a patient the fully developed traveling quack always finds "pockets." If they are not there he makes them by pressing his blunt hook into the delicate membrane. A fold being thus caught he splits it down with a Sims' knife, and then finishes the operation by a forced dilatation of the sphincter, and by collecting his fee. The cutting is trivial, and including only a few of the sacculi, it does not seriously injure the patient, but the indiscriminate forced dilatations, though useful in some cases, leave prolonged bad results in others.

However, as before stated, the sacculi may be really diseased. Hence it is often necessary carefully to examine the entire circle of them, when obscure reflex distresses are

found harrassing the patient. For this purpose place the patient in Sims' position in a good light and insert any good speculum. Carefully try the lower ends of all the grooves between the columns of Morgagni with the point of a Sims'

Fig. 23.—Sims' Blunt Hook.

blunt hook. If any sacculus is swollen, suppurating, or excessively sensitive, it is best to snip it out with curved scissors as recommended long ago by Prof. Henry Smith, or else to split it downward with a probe-pointed bistoury.

Fig. 24.—Curved Scissors.

The incisions should not be deep, and a little boric acid or iodoform should be dusted into the wound. The number of seriously diseased sacculi found by any honest examiner will not be large, but the few discovered are, on account of their nervous relations, prolific in distressing reflexes.

CHAPTER VI.

ABSCESS AND SINUS; FISTULA IN ANO.

Suppuration in the cellular tissue, around the rectum, as well as in the walls of the intestine itself, and in the marginal region of the anus, is so frequent an occurrence that it may be said to be responsible for thirty or forty per cent. of all troubles about the anus. It may be doubted whether the experience of the profession at large would conform to that of Allingham, who found that two-thirds of all recorded rectal operations at St. Mark's Hospital, London, were cases of fistula in ano. It is quite likely that hæmorrhoids are a more common affection in the practice of most surgeons. Next in frequency, however, without doubt, would come the various forms of abscesses and their sequelæ, sinuses and fistulæ.

Sinuses about this region are much more commonly presented to the surgeon than abscesses in the acute stage, and call for much more skill and patience in their treatment. Not every abscess in the vicinity of the anus necessarily produces a fistula. The fact must have come under the observation of all who have treated many cases of such troubles, that such collections of pus do often break or are opened externally, and heal as promptly as those in any other part of the body. On the other hand, many cases refuse to heal completely, and a sinus remains for months or years, which ultimately requires surgical interference for its removal. Early incisions into pus collections about the rectum undoubtedly tend to prevent the latter result.

Those superficial abscesses which sometimes form at the anal margin have no tendency to produce fistulæ, and require

no especial description. They are due in most cases to inflammation in some obstructed follicle or gland which has become irritated in the various movements of defecation, sitting, riding or walking. Suppuration in an inflamed hæmorrhoid may also cause small superficial abscesses. These minor forms should be treated like ordinary boils in other parts, by fomentations, anodynes, and early incisions.

Deep abscess at or near the rectum is a more common and serious affection. The large amount of loose cellular tissue, especially behind the rectum, allows very large collections to accumulate before external pointing occurs; and as such abscesses connect with the bowel, they may be found distended by gas and fæcal matter, and in a highly septic condition.

The causes of ischio-rectal abscesses are not always evident. The presence of foreign bodies in the rectum, the irritation produced by instruments such as syringes, or by falls, blows and other traumatic influences are often found to be exciting causes. Perhaps more often no direct history of injury is present, and the case must be classed as idiopathic. Extravasation of the intestinal contents through some ulcerated portion is supposed to be the cause in many instances. This, however, is largely a matter of conjecture, for it is not usually possible to determine whether the opening into the rectum is a cause or only an effect of the suppuration of the connective tissue outside of it. The tubercular element in causation seems to have as decided an influence in this as in other suppurative troubles. There is a marked tendency to the occurrence of abscess and fistula in phthisical patients which has long been recognized, and which has given rise to some difference of opinion as to the propriety of operative measures in such cases.

The local symptoms which mark the formation of such abscesses, are œdema, pain and often a localized red spot to one side of the anus. Sometimes the abscess takes a horse-shoe form, and presents upon the skin, both sides of the

anus, having half encircled the rectum upon its posterior side. Great tenderness and swelling accompanies deep abscess in this region, even before much redness appears externally.

Examination by the rectum reveals a thickening of the parts posteriorly, and upon one or both sides. This examination is often too painful to be borne by the patient. When fluctuation is detected by the finger in the bowel, and the abscess shows no sign of appearing externally, there is no impropriety in incising it through the rectal wall. Theoretically it would be much better to have such an opening externally only, but in practice an abscess opened by an internal incision will often heal kindly and promptly. As a rule, the swollen and œdematous condition of the parts about the anus gives an indication for early seeking the pus with an exploring needle or lancet externally. Too much importance cannot be attached to the necessity of early interference in order to anticipate extensive burrowing of the pus, perforation of the bowel, and the formation of extensive sinuses, and ultimately a fistula. It is well, therefore, to make early and deep incisions into the thickened and inflamed tissue, since when much œdema has occurred there is almost certainly pus present, and palliative measures result only in loss of time.

Abscesses properly drained and antiseptically dressed will quite frequently close in a week or two, without the formation of a fistula. The use of a drainage tube is necessary only in large abscesses, or in case the incision be small in size. The tube may be shortened from day to day, and removed finally within the first week.

Fistula in Ano.—Allingham reports 196 cases of abscess about the rectum, of which 151, or more than three-fourths, resulted finally in fistulæ. When once established, a fistula has no tendency to heal spontaneously, and may therefore be considered a suitable object in nearly all cases for surgical interference. Properly speaking, a complete

fistula is a sinus leading from within the rectum to an opening on the skin more or less remote from the anus. There are, however, cases in which the internal orifice, if any existed, has closed, or cannot be discovered by the probe. These are termed blind external fistulæ. They require much the same treatment as those which are complete. A blind internal fistula is one which has an internal, but no external, opening. Such a sinus has a tendency to become a complete fistula by ulceration through the external integument. Occasionally cases will be met with in which there is a recurrence of acute abscesses which break externally, and heal for a time. These are often due to the existence of a blind internal fistulous tract, which becomes the receptacle of foreign substances from the bowel.

FIG. 25.—FISTULA TRAVERSED BY PROBE. [*Esmarch.*]

The causes of fistula have been mentioned under the head of abscess, the disease itself being but the chronic stage of that affection. Secondary sinuses or diverticula are usually present in old fistulæ. These add much to the difficulty of diagnosis, and to the severity of operative measures. A form to be noted is the "horse-shoe fistula," so called, in which the sinus surrounds the rectum upon its posterior

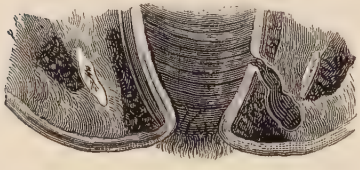

FIG. 26.—INTERNAL INCOMPLETE FISTULA. [*Esmarch.*]

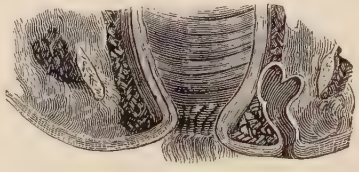

FIG. 27.—EXTERNAL INCOMPLETE FISTULA. [*Esmarch.*]

half, and extends equally upon the two sides, thus undermining the cellular tissue for about one-half the circumference of the bowel.

The symptoms of fistula are not easily overlooked. Little pain is present, as a rule, the chief discomfort to the patient being the slight discharge which is kept up from the sinus as long as it remains unhealed. This is not of itself sufficient to be exhausting, and does not prevent or interfere with ordinary occupations, so that many patients have had fistulæ for years and been conscious of no serious ailment. The annoyance of the discharge is such that most persons are earnestly desirous of getting rid of the trouble, and are willing to undergo an operation for its removal. The diagnosis is only difficult in distinguishing different varieties. There can be no mistaking the general nature of the trouble when the parts are superficially examined. A urinary fistula is not infrequently taken for fistula in ano, and operated upon with, of course, no benefit to the patient. Much care should be taken to exclude these cases, and also those of deep pelvic or lumbar abscess, which sometimes point near the anus. The writer has frequently been called upon to examine cases of urinary fistula which had been divided, under the mistaken supposition that they were cases of fistula in ano. Urinary fistulæ may sometimes break into the bowel as well as externally. The diagnosis becomes in such cases more difficult, but the antecedent history of

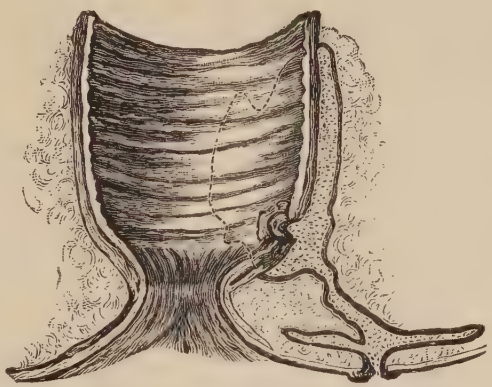

FIG. 28.—SECTION OF "HORSE-SHOE FISTULA" WITH DIVERTICULA. FROM AUTHOR'S OBSERVATIONS.

urethral stricture, or some urinary affection, will serve to clear up doubtful points.

The examination of a fistula is best made with the patient upon the side opposite the one affected, or in the lithotomy position. If a probe be passed into the sinus, and the left forefinger into the rectum, the latter may sometimes feel the point of the instrument projecting into the bowel at a point not far from the sphincter. More frequently, however, some difficulty is experienced in finding the internal opening, on account of the irregular character of the fistula and its numerous pouches (Fig. 28). The opening is not usually at the highest point of the fistulous tract, but is found most often between the two sphincters, within an inch of the orifice.

If the probe be carried to the extremity of the cavity and swept downward, pressing the wall of the gut between it and the forefinger in the rectum, it will often find the internal opening as it reaches this vicinity. In other cases, a slight protuberance, as of granulations, will indicate to the trained finger where to seek for this orifice. The expedient of injecting milk into the fistula, and watching for the point of its appearance through a speculum, is often a valuable aid in the examination.

Treatment of Fistula.—Operative measures for the radical cure of fistula are, upon the whole, satisfactory and free from risk. The operation of dividing the sphincters and intervening tissues yields such good results as to leave little to be desired, unless some measures can be devised of superseding the use of the knife altogether. Of such measures we shall speak further on. When the cutting operation has been decided upon, the bowels should be emptied by laxatives or enemata, and the parts thoroughly cleansed and shaved. If an internal orifice exists, it is simply necessary to pass a director through this into the bowel, and bring the end out through the anus, after which the tissue upon the instrument is divided by a curved bis-

toury. Lateral sinuses and diverticula should now be laid freely open, where they do not extend too far from the anus, and the wound packed with iodoform gauze or lint, covered with antiseptic cerate. Vessels of much size should be ligatured. As a rule there is but little hæmorrhage. Those deep sinuses, which sometimes extend to far distant parts, as into the thigh or buttocks, cannot, of course, be laid open in their entire length. These will heal, however, after the division of the sphincter and the laying open of the principal sack or fistulous tract.

Fistulæ which have no internal opening, or in which it

Fig. 29.—"Royal Bistoury" with which Chief Surgeon Felix cured Louis XIV. [*Esmarch.*]

is supposed to exist, if at all, high up in the bowel, are to be treated by division of the lower inch of the rectum only. The point of the director in these cases must be thrust through the wall of rectum at a point not much over an inch from its external orifice, and the incision made as before directed when the internal opening already existed. The surgeon may rest confident that that part of the sinus above this limit will rapidly close after the division of the parts below, and at the same time be free from anxiety about cutting the peritoneum, which, in inflamed and prolapsed conditions of the rectum, may be tightly glued to the wall of the gut and brought somewhat nearer than normal to the anal orifice. In blind internal fistulæ the reverse procedure

is recommended, except that no director is usually needed, the sinus being divided downward and laid open with a curved, blunt bistoury until the bottom of the cavity is reached and both sphincters are divided. Daily dressings are to be practiced until the granulations have lined the interior of the cut and all tendency to union of its walls has ceased. A probe should be swept through the cut so as to insure this, and the wound kept open by some form of lint or gauze, until healing from the bottom has taken place.

Hippocrates' Method.—The use of the ligature, as advised by Hippocrates, has been revived from time to time, with the hope of avoiding operative measures. Hippocrates employed a cord into which horsehair was twisted. This was drawn through the sinus into the bowel, and the two ends tightened outside the anus. The possibility of thus curing a fistula by the gradual cutting through of a ligature is evident, and there may be cases in which the method would be less severe than that by incision. It is open to the objection that only simple sinuses can be managed in this way. Those fistulæ which have numerous diverticula would not be benefited by merely closing the main channel, as new abscesses would at once form.

Elastic ligatures have been tried with success in treating fistulæ by this method. They have the advantage of cutting more steadily and continuously, and also avoid to some extent the necessity for tightening the cord, which is a painful feature of daily recurrence with the inelastic ligature. On the whole, the method has little practical value, and in its present form is not likely to become a favorite one.

Itinerant Methods.—The "traveling doctors," and the resident irregulars found in the cities, have developed sundry methods of treating fistulæ which, though considerably varied in details, may be stated about as follows in general:

First, they explore the fistula with probes, some claim-

ing advantage in a very flexible one. Then they smear the adjacent skin with an unguent, to protect it from the irritating applications employed. They then thoroughly inject every part of the fistula with a solution of hydrogen peroxide. This is put in either through a fine flexible catheter, or with a syringe having a flexible metal pipe. After the froth caused by the peroxide has mostly escaped, some take a mixture of equal parts of 95 per cent. carbolic acid, and of 10 per cent. solution of cocaine (probably using alcohol or glycerine to complete the solution), and inject ten or fifteen minims into the remotest parts of the fistula. Instead of this last formula "Brinkerhoff System" employs the following mixture under the name of "Ulcer Specific:"

℞ Dist. ext. hamamelis.....fl. ʒv.
Liq. fer. subsulph.....fl. ʒj.
Acid carbol. cryst.....gr. ij.
Glycerinæ.....fl. ʒij.

Misce. Signe. Inject ten or fifteen drops deeply into the fistula, and press the track of the fistula with the finger, to force the fluid more deeply in.

Many itinerants finish the operation two hours later by injecting the fistula with equal parts of oil of eucalyptus and glycerine, and putting the patient strictly to bed for two days.

It will be observed that every step in this treatment consists in the injection of some vigorous antiseptic. No disciple of Lister could fight it out on that line more persistently. A few of them prepare the fistula for injection by scratching or scarifying slightly the interior with a probe carrying a jointed scarifier, which projects laterally from the tip and scratches as it is drawn out.

An excellent regular surgeon, Dr. Matthews, of Louisville, has systematized this latter plan, and made it more energetic. He dilates the external part of the fistula with a long laminaria tent, and then inserts Otis' urethrotome and both dilates and scarifies the interior, repeating the operation

as often as needful. He does not speak of any antiseptic injection, but claims success in some twenty cases.

The truth is, that anal fistulæ have a natural tendency to recovery, and are held back from it mainly by two things:

1. The unfavorable effect of the undrained septic fluids within the sac.

2. The tightness of the external opening, which prevents free drainage, and keeps the sac distended with this putrid pus.

It is demonstrated by Dr. Matthews on the one hand, and by the experiments of the quacks on the other, that by controlling these two conditions, many cases will heal spontaneously. It follows that among the thousands of patients subjected to cutting operations by surgeons for this disease, there are many who might be cured by much milder means.

CHAPTER VII.

FISSURE OF THE ANUS; OR IRRITABLE MARGINAL ULCER.

Fissure, or irritable anal ulcer, may be defined as an ulcerated crack or fold at the muco-cutaneous junction laying bare certain nerve fibres and giving rise to spasmodic contraction and paroxysmal pain of a peculiar character.

It is commonly—and correctly—asserted that this is the most painful of rectal diseases. In appearance inconspicuous, a mere innocent-looking tear across "Hilton's white line," it is nevertheless the source of surprising and intolerable pain, and gravely disordered reflexes.

Contrary to general belief, Bodenhamer has proved that fissure of the anus was described by ancient writers. Paulus Ægineta,* a Greek writer of the fourth century, has given a brief but adequate account of the disease. Ætius (*Medici Græci contractæ ex veteribus, etc.*—Tetr. IV, Serm. II., Cap. III) describes fissures along with condylomata.

To the French surgeons we are indebted for nearly all the modern investigations of the disease and the chief improvements in treatment. The celebrated Ambrose Paré, writing about 1550, describes almost as clearly as any modern writer, the spasmodic contraction and the sharp and burning pain associated with fissures of the anus and uterus.†

* Fissures are occasioned principally by hard fæces, and, being slow of granulating owing to their callosity, must be converted into recent ulcers by paring (excoriating, scarifying or incising) them with the nails, or a scalpel; when they may be made to granulate by proper applications.—*Lib. Septem, Cap. LXXX.*

† Chapps or fissures are cleft and very long little ulcers, with paine very sharpe and burning, by reason of the biting of an acride, salt and drying humour, making so great a contraction and narrowness in the fundament and neck of the wombe that scarcely the toppe of one's finger may be put into the orifice thereof.—*Eng. Translation*, 1634.

Another early French writer—Lemonnier—has given what seems an adequate account of the affection, comparing it to the chapped condition produced in the lips and knuckles by exposure to cold.* Sabatier also mentions it in a similar connection. Molliere, Gosselin, Recamier and Boyer severally aided in the investigation of this disease. The last named, especially, brought out very clearly the importance of reflex spasm of the sphincter as a symptom. This, rather than the fissure itself, he held to be the primary and essential feature of the affection. Maisonneuve and Dupuytren advocated and practiced forcible dilatation, the former introducing the whole hand.

Among English writers Curling and Syme very early advocated the French ideas of treatment. In America stretching as a means of cure was strongly advocated in 1864 by Van Buren, who probably obtained the idea from the same sources.

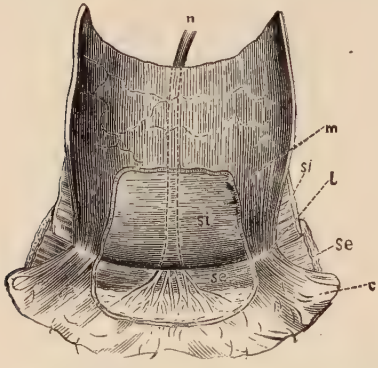

FIG. 30.—DIAGRAM OF NERVE SUPPLY OF ANUS. [*After Hilton.*]

M. Mucous membrane. C. Skin. S. E. External sphincter. L. Hilton's "white line." S. I. Internal sphincter. N. A nerve passing between the sphincters, and emerging at the "white line" to skin about anus.

Causes.—The predisposing causes of fissured anus and its peculiar train of symptoms lie in the structural arrangement near the anus and their physiology, especially of nerve control. A word is therefore necessary as to the special anatomy of the parts.

Hilton has shown that the line of junction of the skin and mucous membrane at the anus is also the exact line which separates the external

*Les ragades ou fissures sont les petits ulcères douloureux, piquans et sans grosseur, qui suivent la langueur des rides du fondement, et qui resemblent assez à ces engelures oú crevasses, que le froid produit áux lèvres et aux mains pendant l'hiver. — *Lemonnier, Traite de la Fistule de L'Anus*—1689.

from the internal sphincter. This is marked in most cases by a line of more condensed connective tissue constituting the edge of the fascia and known as "Hilton's white line" (Fig. 30). The important anatomical fact in connection with this line is that it is the point of exit of the branches of the pudic nerve which descend between the two sphincter muscles and are here distributed to the papillæ and mucous membrane of the anus.

The abundant nerve supply of the mucous membrane accounts not only for the extreme sensitiveness of the part but also for its very abundant reflex communications with other organs.

Ball shows that the nervous supply of the rectum is quite analogous to that of the bladder in which the most sensitive portion of the organ is the neck and outlet.

Small ulcers about the anus are painful or not in proportion as they are near or remote from this particular zone of sensory nerve supply. External and internal ulceration which do not involve the actual meeting line of skin and mucous membrane have none of the characters of true fissure. The most plausible theory as to true fissure supposes that these nerve filaments are actually laid bare by the ulceration, something as they are in figure 30 by dissection, so as to be subject to actual contact with each motion of the bowels.

Upon this supposition it is not difficult to explain disproportionate symptoms which so small a lesion produces.

We are thus prepared to understand why reflex spasm of the sphincter is so constant and important a sign of this disease and how other and wider reflexes are to be accounted for; such, notably, as urinary retention, radiating pains, etc.

Reference to Hilton's diagram of the nerve supply and its relation to other spinal nerves shows that impressions from the fissure are carried to that part of the cord which supplies the pudic nerves and the ilio-lumbar, lumbar and

the sciatics, which include the motor supply of the external sphincter as well as the bladder and lower extremities.

In this peculiar nervous mechanism we find an explanation of predisposing causes as well as the pathology and most important symptoms of this remarkable affection, after the ulcer has once been produced. As to the immediate causes of the fissure, they may originate in cracks of the mucous membrane, produced by forcing out indurated fæcal masses. They occur in some cases from degeneration of the raw spots left by the removal of piles, and in other instances from ulceration caused by foreign bodies lodged in the sacculi Horneri. In short, any cause, constitutional or local, capable of causing ulcers in other parts, may affect the verge of the anus in the same way. The perplexing point is not the origin of the ulcers, but their astounding painfulness. Three causes combine to produce this result:

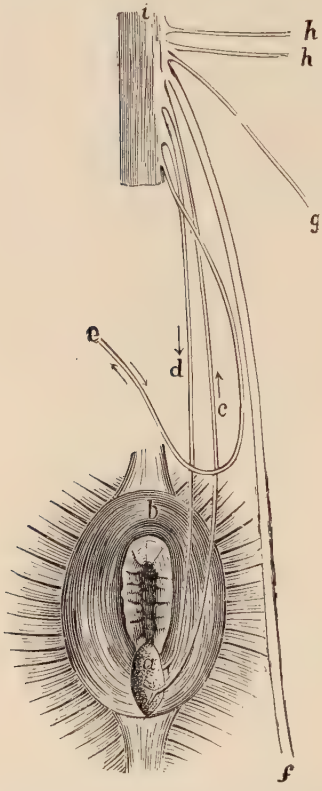

FIG. 31. — DIAGRAM OF NERVE TRUNKS WHICH ARE CONCERNED IN PRODUCING REFLEX SPASM.

a. Fissure. c. Sensory nerve.
d. Motor nerve. e. Pudic.
f. Ischiadic. g. Ilio-lumbar.
hh. Lumbar. i. Spinal center.

1. The verge of the anus, like the orifices of all other mucous canals, is, even in its healthy state, extremely sensitive to painful impressions.

2. The sphincter, excited by the nerves of the diseased parts to spasmodic energy, grasps the ulcer very forcibly at every contraction.

3. The lower extremity of the fissure receives septic

germs from the external air, which propagate putrescence in the secretions of the sore and give them the same virulently irritating quality, which putridity generates in the discharges of ulcers elsewhere. The facility with which antiseptics often cure the fissures gives support to this explanation.

Symptoms.—No disease presents a more distinct clinical entity than fissure of the anus. From its symptoms alone, without any physical examination, an almost certain diagnosis could be derived were such a course necessary. The pain associated with fissure is usually felt after defecation rather than during the act. It is of a dull yet peculiar sickening kind, perhaps similar to that felt after injuries to the testicles, and is described as intolerable, most patients being completely incapacitated by it for the time being. The dread of this suffering causes the patient to postpone evacuating the bowels, which in time causes hardened accumulations and aggravates the disease.

Spasmodic contraction has already been mentioned as a constant element in this disease. The iron grip of the sphincter has not a little to do with the intensity of the pain in all probability. Boyer considered this contraction the essential feature of the disease—a view which very few surgeons have accepted. It is probable that the presence of this extreme contraction first suggested the *massage cadencé* and other forms of dilatation which have been practiced in this affection. Other reflexes such as pains in the loins and lower extremities, retention or incontinence of urine or prostatic irritation are occasionally present as in most rectal disorders. Curschmann asserts that spermatorrhœa often co-exists with rectal disease.

The local signs of fissure are wholly disproportionate to the general mischief they produce. If the patient is laid on his side in a good light, with the knees drawn up, the surgeon will usually see a red prominence close to the verge of the anus, looking like a small pile. This has been termed

very aptly the "sentinel pile." If he draw the mucous membrane away on either side, he will unfold a raw fissure or groove, running upward, which, on being spread out, presents itself as a small, oval ulcer from four to eight lines in length. A Sims' or Allingham's speculum assists the view. Allingham says that it is not uncommon to find a polypus either at the upper end of the ulcer or lying against it on the opposite wall of the rectum.

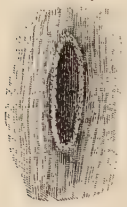

FIG. 32.—FISSURE OF THE ANUS UNFOLDED.

The position of the fissure is almost always dorsal, for what reason is not known. When unfolded and touched with a probe its surface is found to be excessively tender, clearly justifying the term "irritable" which is often applied to it.

Course and Prognosis.—It cannot be said that a fissure has any spontaneous tendency toward recovery if let alone. Years may elapse without any other change than the gradual wearing down of the patient's vitality from incessant pain and nervous strain. Van Buren mentions cases which had existed five years and longer, one of whom, a lady, from sheer dread of pain would postpone the natural evacuations as long as fourteen days. Complete prostration for twenty-four hours followed each movement and large quantities of opiates were given on each occasion. With proper treatment fissures of the anus can be cured with almost infallible certainty and with practically no risk, the operation most practiced being one of the simplest known in surgery.

Operative Treatment.—A fissure can be cured radically and finally by making an incision along its deepest fold through the membranes and a certain distance—say one-third or one-half the thickness of the external sphincter. So simple a procedure requires no further description. The line of incision should be a little longer than the fissure itself so as to make sure of severing all the exposed nerve filaments. An anæsthetic is preferable, yet with cocaine it

can be done safely and without extraordinary pain. This method is scientific since it removes at once the principal source of trouble by severing the exposed nerve *in situ* and temporarily at least abolishing its function.

As first practiced by Boyer the division of the sphincter was made complete with a view totally to prevent its spasmodic contraction until healing had occurred. This was eminently successful and not in itself a severe operation. It was found, however, by Curling and the English surgeons that simply incising the mucous membrane and a little of the subjacent tissue practically cured as well as the complete division, and this method has never been improved by later surgeons.

Forced Dilatation of the anus for the cure of fissure has also been practiced very extensively and successfully since it was first employed by the French surgeons.

Since this is a procedure not less severe than the incision, it is not clear that it has any great advantage. It rests upon a sound pathological basis and is altogether a rational method of accomplishing the same result sought by dividing the sphincter. Recamier practiced what was in reality a dilatation of the sphincter under the name *massage cadencé* with successful results in the cure of fissure.

Maissonneuve, going much further, advocated overstretching the anus by introducing the whole hand and then forcibly withdrawing the closed fist. It is doubtful if stretching is any less severe than the small incision of the cutting operation. The after-soreness would be greater in all ordinary cases. On account of the prejudice of some patients in favor of non-cutting operations it may be found to be preferable in a certain proportion of cases.

A considerable proportion of cases can be cured by still milder measures. It is necessary first to expose the ulcer to view, and to blunt its sensibility by thoroughly wetting its surface and edges with an eight per cent. solution of cocaine, well brushed in with a camel's hair pencil. Allow-

ing about five minutes to elapse, the brushing should be repeated once or more times, so as to get a decided effect. The sore should now be again brushed with a solution of the kind given in this formula:

℞ Corrosive sublimate.....gr. j.
Cryst. carbolic acid.....ʒ ij.
Hydrochlorate of morphia.....gr. v.
Water.....fl. ʒiv.

Mix. S. Apply with a camel's hair pencil.

Next, dust or pack the fissure with dry iodoform, and place the patient, if possible, in bed. This dressing, if repeated once a day, will cure great numbers of cases. Carbolated iodoform ointment may be pressed into the fissure instead of iodoform, if preferred. Antiseptics of almost any kind, carefully placed in the cavity of the ulcer, will cure a great proportion of the cases. Kelsey favors a nightly application of Goulard's liniment, and also has cured many cases by touching the surface with a solution of nitrate of silver of the strength of five or ten grains to the ounce of water.

Allingham strongly advocates applying the following ointment several times a day:

℞ Hyd. sub. chlor.....gr. iv.
Pulv. opii.....gr. ij.
Ext. belladon.....gr. ij.
Ung. sambuci.....ʒj.

Misce.

An ointment of the oxide of mercury, thirty grains to the ounce, has cured many.

The following plan is more energetic, and very commonly succeeds. First, anæsthetize the ulcer as before with applications of cocaine, then thoroughly cauterize the whole

floor of it with a stick of nitrate of silver, and fill the fissure with this ointment:

℞ Iodoform ..... ℥j.
Belladonna ointment ..... ℥ss.
Carbolic acid ..... gr. x.
Simple cosmoline ..... ℥ss.
Mix.

Apply this ointment thoroughly every day, after having each time cleansed the sore with antiseptics, and repeat the nitrate of silver very gently every third day.

Itinerant Methods.—The traveling doctor generally has either a long or a short circuit. The long circuit brings him back to the same place in four weeks, and the short one in two weeks; hence he regulates his times of seeing patients by the time of his return, and not according to the patient's needs, leaving some *placebo* to occupy the attention between times. In this way the case is prolonged and kept on hand as a source of revenue, according to one of the little secret books, "from six to eighteen months," when it should be finished in one-tenth of that time.

The "Brinkerhoff System," as applied to fissures of the anus, is this: Once or twice a month, as the itinerant comes around on his circuit, he inserts his little speculum, cleans out the ulcer, and applies to it a solution of nitrate of silver, forty grains to the ounce. Between the applications, the patient uses a morning and evening treatment himself. Each morning he is to evacuate the bowels, then inject the rectum with lukewarm water, and finally insert into it a little ointment, consisting of three grains of carbolic acid and eight grains of sulphur to the ounce of vaseline or lard.

For evening treatment he uses "Brinkerhoff's Ulcer Remedy," having the following composition:

℞ Extract of hamamelis (distilled) .... fl. ℥v.
Solution of persulphate of iron ..... " ℥j.
Cryst. carbolic acid ..... grs. ij.
Glycerine ..... fl. ℥ij. ♏.

Add half a teaspoonful of this to the same quantity of starch, and about an ounce and a half of water. Inject into the rectum every evening.

This "system" is gotten up for itinerants who are expected to be ignorant, and who cannot be trusted with edge-tools; it therefore sternly prohibits all cutting operations, and furnishes no instrument with which an incision can be made.

Ulcers Situated Above the Anus.—When ulcers are situated high enough to be entirely above the anus, and expose no part of their length to the reception of septic germs from the atmosphere, they do not acquire the terrible irritability of true fissure. They are bathed in the bland rectal mucus, which itself is a decided antiseptic, and rarely become the seat of much pain, showing in that respect a wonderful contrast to the ulcers situated low enough to present one extremity to the external air.

Causes.—The causes of the higher ulcers are similar to those producing ulceration elsewhere, such as foreign bodies, mechanical injuries, simple inflammation, as in dysentery, tuberculosis, syphilis, chancroid, sarcoma, true cancer, etc., etc. In the prison hospital of Saint Lazarre, in Paris, devoted to the treatment of diseased prostitutes, we were shown by the surgeon in charge numerous cases of chancroids of the anus and rectum, caused by the practice of sodomy, which is prevalent to a great extent in that city. This vice is so rare in the United States, except among immigrants from Southern Europe and from China, that rectal chancroids hardly exist among native Americans. We have met them a few times, however, in cases of recto-vaginal fistula, where the virus entered the rectum through the fistula. The ulcerations of tertiary syphilis are liable to attack the rectum as well as other parts, and not being dependent on contagion for their rectal location, they are not very uncommon in this country.

Clinical History.—When simple ulcers of the rectum are of very recent origin, they are apt to be accompanied with pain, tenesmus, and symptoms of dysentery, with discharges of blood, pus, and rectal mucus, as well as fæces.

In chronic cases, these symptoms are mostly absent, though pus, yellow mucus and streaks of blood are found in small quantity. The proof of the ulceration is mainly obtained by examination with the finger and the speculum. If the ulcers are phagedenic, or large and multiple, they may occupy nearly or quite the entire circumference of the rectum, and in healing induce contraction and thus produce stricture. Most strictures originate in this way.

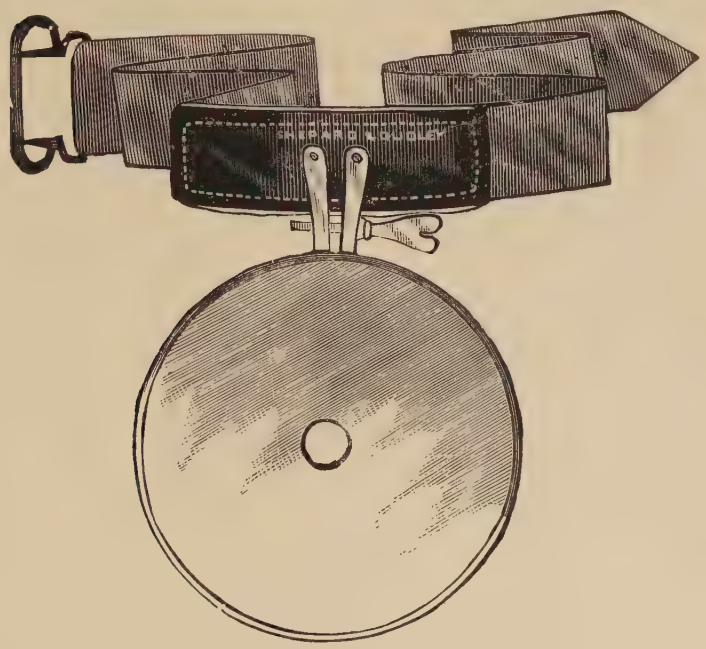

FIG. 33.

CONCAVE MIRROR TO REFLECT CONDENSED LIGHT INTO THE RECTUM. THE HEAD BAND MAY BE REMOVED AND A HANDLE ATTACHED AT PLEASURE.

Diagnosis.—If pus is discharged from the anus, and the patient shows other signs of tertiary syphilis, and if on examination one or more ulcers are found without other known cause, they may be presumed to be syphilitic. If the erosion exists on the surface of a tender and painful tumor, not seeming to be simply inflammatory, it will generally be

found cancerous. The microscope will complete the diagnosis. If a tuberculosis diathesis is present, or suspected, the microscopic search for the tubercle bacillus will assist the diagnosis, even if we do not accept the bacillus as a cause.

When we have to deal with simple ulceration well above the verge, the finger often helps to determine their size and location, but it is not sufficient for a full investigation. In these deep cases we need the tubular form of speculum, and frequently must etherize the patient, if we are to make a thorough search. The straight tube will generally reach far enough, but the curved one shown on page 16, Fig. 8, will enable one to carry the search still higher. For a thorough examination it is necessary to empty the rectum by an enema.

Treatment.—When the ulcers are due to any constitutional disease, they will usually recover by simply curing the cause, without any local treatment; but if there is any local sepsis, or depraved quality of the intestinal secretions, direct applications become necessary. In either case a prolonged rest in bed is important. The great value of the horizontal position in hastening the cure is too much overlooked. "An hour's walking and standing around the sick room will undo more than the other twenty-three can gain." (Kelsey.)

The local medication is best made in the form of antiseptic washes and suppositories, of which nitrate of silver, two grains to the ounce, is a favorite. A large injection is thrown in and allowed to run out again, after which a suppository, containing three grains of iodoform, five grains of subnitrate of bismuth and a tenth of a grain of morphine, may be inserted. The suppository may be used twice a day, but the injection only once in two days, and if it irritates it should be made weaker. It is well, however, to rinse out the rectum daily through a tube, with warm and slightly salted water containing one grain to the ounce of carbolic

acid, taking care that the fluid runs well out again, lest too much carbolic acid be absorbed. When the ulcers are seen through the speculum they may be touched with nitric acid, nitrate of silver, comp. tinct. of iodine, or carbolic acid, but the speculum should not be inserted with irritating frequency.

The substance of the whole experience of surgeons is that simple ulcers ordinarily heal through cleansing and antisepsis. It is very different, however, if the ulcers are chancroids, or the result of tertiary syphilis, or tuberculosis.

Chancroids in the rectum, as before stated, are rare in this country. If discovered they will present the yellow, diphtheritic color of the floor, common to the species everywhere, which, with the history of the case, will enable one to make out the diagnosis. It is necessary to treat such cases by frequent applications through the speculum. To this end the rectum should first be emptied and antiseptically washed out. Then inserting the speculum, bring chancroids well into view, and first having brushed the rectum with a four per cent. solution of cocaine, cauterize them with a stick or glass brush dipped in fuming nitric acid. Rinse out the surplus of acid, remove the speculum and insert a suppository containing three grains of iodoform, five grains of boric acid and a fifth of a grain of morphine. This should be repeated every second day, until the yellow color of the floor of the ulcer disappears, and a rose tint takes its place, indicating that the virus of chancroid is no longer present, and the ulcers have become simple ones. During the treatment the rectum should be washed out three times a day with the same washes as were recommended above for simple ulcers, and when the nitric acid applications cease, the morphine may be omitted from the suppositories, unless great irritability exists. At any rate it must not be given a great length of time without an occasional week of omission, lest the opium habit be induced.

If tertiary syphilis exists, the case requires locally mere

washes, like those directed for simple ulcers, but constitutionally it demands a vigorous administration of iodide of potassium or sodium by the stomach.

In tuberculous cases the local sores require ordinarily only washes like those used for simple ulcers, though, if tubercle exists in the ulcer itself, it may require to be scraped. Such cases, however, are more medical than surgical, and require the same general treatment as is given to other tuberculous patients.

When the ulcers are dependent upon the depraved condition of the system caused by Bright's disease of the kidneys, they will usually be incurable, but still the use of mild but free washings will alleviate the local symptoms.

Whenever ulcers occupy a large portion of the circumference of the rectum, or anus, the contraction during their healing tends always to induce strictures, which can only be prevented by mechanical dilatation, a subject which we will consider fully in the section on strictures.

CHAPTER VIII.

PROLAPSE OF THE RECTUM.

There are three forms of rectal prolapse:

1. Prolapse of the mucous membrane alone, as represented in Fig. 34.

2. Prolapse of all the rectal coats. This variety brings down the peritoneum if the extrusion proceeds to some distance, as is shown in Fig. 35.

FIG. 34.—PROLAPSE OF MUCOUS MEMBRANE (*Esmarch*).

3. Prolapse of the upper part of the rectum into the lower, which is the same accident which is called invagination or intussusception in other parts of the canal.

Prolapse of the Mucous Membrane.—This is the most frequent variety, and the majority of cases are in children under five years of age. The acute cases are generally in children, and are usually produced by simple excess of straining at stool. The mucous membrane is very loosely

attached to the parts beneath, and readily protrudes. Kelsey says the first attack always comes on gradually, but this is probably an error, as it often occurs as a sudden accident in young children who have shown no sign of it before. Besides straining, we have for causes paralysis, excessive dilatation, and ulcerative destruction of the sphincters, or of any part of them.

When the attack comes on suddenly there is considerable pain, and a red and often bloody tumor is found projecting from the sphincter, which is sometimes reduced spontaneously, and at others has to be pressed back by the hand. It is naturally marked by circular folds as shown in Fig. 34, but in other cases the submucous effusion renders the tumor smooth. Prolapse of the mucous membrane alone rarely projects more than two inches. If the tumor is longer than that, especially if it assumes a cylindroid form, other coats of the intestine will be found present in the mass.

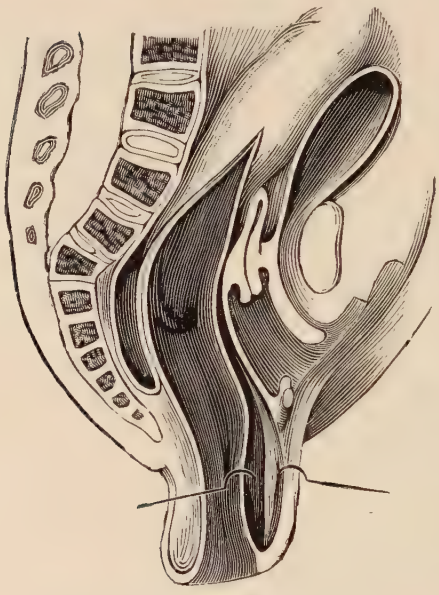

FIG. 35.
PROLAPSE OF ALL THE COATS (*Esmarch*).

In a few cases we have the third form of this accident, where the upper part of the rectum projects into the lower, and even considerable lengths of intestine from above have been known to be invaginated and protrude through the anus. Mortification of the protruded part occasionally occurs, with the death of about half the patients.

Treatment.—Whatever the form of the accident, efforts must be made to return the mass, which can usually be done without ether by first washing the parts with solution of cocaine, and then pressing them back with oiled hands. Persistence in taxis will almost always succeed. In many cases the patient will remain cured, if he refrains from straining; but where the bowel continually comes down, artificial supports must be used. These are constructed in two ways. In one a belt is placed around the waist, and an elastic band having a solid or inflated pad attached is passed between the thighs in such a way as to press the pad against the anus. The anterior part of the band is divided so as to come up to the belt in front on each side of the genitals. Another form consists of a belt, half steel and half leather, buckled about the hips just above the trochanters, while a bent steel spring passes down behind and carries a pad to press against the anus. In temporary cases, it assists the stability of the pad to draw the nates together with a broad adhesive plaster.

The bowel being returned, and provision being made for the time being for retaining it, if needed, the surgeon must of course seek to correct every constitutional or local disease tending to bring on the prolapse, and it is not necessary for us to enter extensively into that branch of the subject. Locally, astringent injections are of value, such as solutions of tannin and alum, sulphate or chloride of zinc, or of tincture of iron, using them at about the same strength as one would in the urethra; that is to say, we can use to each ounce of water, in most patients, fifteen grains of alum, two of tannin, of chloride of zinc, or of sulphate of zinc, varying according to the tolerance of the patients. As the rectum absorbs readily, toxic substances cannot be used except in officinal doses. Astringent suppositories containing alum, morphine, extract belladonna and cocaine often help. Tannin is incompatible with morphine and cocaine.

Operative Treatment.—When the prolapse is due to a

rent in the perineum, or across the sphincter, or to a gap made by ulceration, it can be remedied by cutting away the cicatrized edges of the gap or rent, and closing them by sutures.

Where the case is a chronic protrusion from other causes, and ordinary corrective and palliative measures have failed of adequate effect, then energetic operative measures on the prolapsed tissue itself are justifiable. The direct amputation of the protruded mass is subject to two objections. First, the cicatrix left after the amputation is a ring completely surrounding the opening, and in its subsequent contraction is liable to result in stricture. Secondly, if the prolapse contains any fold of peritoneum, the opening of that sac would involve some danger, though the precautions of modern surgery can reduce the peril to moderate dimensions. It is also to be remembered that the prolapsed peritoneal pouch may be hernial, to the extent of containing ovaries, and coils of intestines, etc. For these reasons amputations are not to be resorted to except when special circumstances compel us to confront the danger. If the gravity of the case, however, makes the amputation necessary, it should be done with all the antiseptic precautions proper to intra-peritoneal surgery. The mucous membrane should first be divided, and all bleeding vessels tied. The muscular coat should next be treated in the same way. An opening should then be made in the peritoneum, the finger introduced, and the presence or absence of any hernial protrusion ascertained. If any viscera are down they are to be returned. The peritoneal coat is then to be divided, and sewed up with fine antiseptic animal ligatures, and the mucous and muscular coats closed over it in a similar manner. Mikulicz (Deutsch. Geselsch. für Chirurg. XVII. Kong.) is of the same opinion, and would also apply the plan to cases of chronic prolapsed invagination of the colon. Two feet and a half of prolapsed colon were removed in one instance. Some would, however, close the whole by antiseptic stitches going through all the coats at once, as in

ordinary laparotomies. This is better than Kleberg's operation of tying the gut in two halves with rubber tubes. During the recovery and for months after dilatation must be used to prevent stricture.

The operations most in favor with the best surgeons are those which remove or destroy a part of the mucous membrane and skin near the verge of the anus.

Excision.—The skin of the vicinity having been shaved and disinfected, the patient is anæsthetized and placed on his back, in a good light, with the knees drawn up and asunder, while the surgeon sits facing the perineum, as in lithotomy. The mucous membrane is then raised from the deeper parts by suitable toothed forceps or a tenaculum on one side, and removed with the scissors, leaving a broad denuded oval patch or wound, longest in the direction of the axis of the rectum. If the skin participates in the tumor, a portion of that also is included in the lower angle of the wound. Another similar piece is taken on the opposite side. Some surgeons take several narrower longitudinal strips, but always leave enough mucous membrane to prevent serious stricture. Every bleeding vessel should be tied, and the wounds closed by sutures, otherwise dangerous hæmorrhage may occur. The patient should be then confined to bed for several days, with gentle compression upon the tumor, unless it has already retracted within the verge.

Some surgeons advise to clip out sections of the connective tissue and muscular coat with the mucous membrane, but if there is reason to think the mass contains a fold of peritoneum, this must be done with such caution as not to open that sac.

Cauterization.—Owing to the dread of hæmorrhage, and the fear of wounding the peritoneum, many of the best surgeons prefer the actual cautery. The patient being anæsthetized and posed on the table as before, the cautery instrument, generally a narrow one, is applied, beginning near the upper part of the protrusion, and drawing it downward, going deeper and wider at the lower part, and termi-

nating at the junction of the skin and mucous membrane. From three to six such stripes are burned. In bad cases, Allingham burns completely through the sphincter muscle itself at two opposite points, having previously reduced the protrusion. The contraction following the burns through the sphincter remedies the relaxed condition of that muscle, and enables it to hold up the parts above. It is necessary, however, that the patient be kept in bed some three weeks, lest the cicatrices stretch out and leave too much laxity of the parts.

Potential Cautery.—Owing to the horror felt by patients at the idea of being burned with hot irons, many surgeons have used the potential cautery, employing nitric acid, sulphuric acid, potassa, potassa cum calce, and chromic acid. These plans have not been favorites, owing to the difficulty of confining the caustics to the desired lines. This, however, is merely from want of due preparation. If the part to be destroyed is held in a trough-shaped clamp, in such a way as to conduct off the caustic fluids formed, and if the parts adjacent be adequately protected with folded napkin-cloth saturated with alkaline carbonates, in case acid caustics are used, or acid solutions if alkaline caustics are tried, the result to the patient will be practically the same as if the actual cautery had been employed, though the surgeon will have had a little more trouble with his preparations.

The Itinerant Treatment.—The itinerants use small hypodermic injections of equal parts of an eight-grain solution of muriate of cocaine and phenol sodique, or other weak preparations of carbolic acid. They insert two or three drops at each puncture, and scatter the punctures about an inch apart over the surface of the tumor. They claim to cure in from one to three visits in most cases. "Brinkerhoff," however, advises his itinerants to let prolapsus alone, and says he can give them no method of treatment worthy of their attention.

Vidal, of France, used hypodermic injections of ergotine, with alleged success.

CHAPTER IX.

POLYPUS AND OTHER NON-MALIGNANT GROWTHS.

When a tumor is a mere hypertrophy of the normal elements of a mucous membrane and of the sub-mucous connective tissue, it is usual to call it a polypus. According to the relative amount of mucous glandular tissue, or of fibrous substance, the polypus is hard or soft. If the papillæ of the surface are multiplied and elongated they give it a hairy appearance. Others are knobby and wart-like to the look. Some are smooth, and others are granular in appearance from being covered with the follicles of Lieberkühn, or with the hypertrophied closed follicles. Some are pedunculated, and others more sessile. In the rectum they are generally small, but have sometimes been found larger than an orange. Polypi are generally painless, but from special location in the grasp of the sphincter, or other causes, they may induce suffering. If they are of some size they can be generally found with the finger, but sometimes have to be sought through the speculum.

Fig. 36. Club-Shaped Polypus, from Patient of Author.

Fig. 37.—Rounded Polypus.

Treatment.—Polypi are to be treated by removal. The only material danger is hæmorrhage from the artery of the pedicle, though one death is on record from the wounding of the peritoneum. This was in the practice

of the celebrated surgeon Brock. The patient died of peritonitis after the removal of a polypus, when it was found that it had originated in the sigmoid flexure, and had lengthened its pedicle down into the rectum, bringing with it a small tube of peritoneum in the center of the pedicle. The best way is to ligate the pedicle close to the mucous membrane, and snip it off far enough outside the ligature to prevent the knot from slipping. Many twist them off, and "trust to luck" about the hæmorrhage. Where there is nothing like a pedicle to be tied, resort may be had to the actual or potential cautery. Whatever method is adopted, the cure is usually permanent.

FIG. 38.—VILLOUS POLYPUS.

Itinerant Treatment.—Brinkerhoff directs his itinerants to tie the pedicle close to the wall of the gut with waxed saddler's silk. Then, if the pedicle is long, they are to snip it off outside the knot. If it is short they leave the tumor *in situ*, put the patient to bed, and constipate the bowels for about three days, when they are to give a gentle cathartic.

Vegetation, Warts or Papillomata.—These growths are hypertrophies of the papillæ of the skin, in fact a kind of external villous polypi, so to say. They were formerly considered syphilitic growths, but at present this idea is abandoned, though they generally occur on patients who have practiced venereal excesses.

In females they are to be found on both the anus and vulva at once. They consist of numerous little pedicles whose summits branch out and press against the branches of adjacent pedicles, so that the whole mass sometimes looks like a solid tumor on the surface, yet if scissors be run under so as to snip away all the pedicles, the skin is found beneath merely dotted pretty thickly with the small stumps.

Treatment.—Vegetations may be sometimes destroyed by frequently dusting them with tannin and burnt alum, but generally the best way is to anæsthetize the patient and snip them away with scissors, using astringent lotions afterwards.

Condylomata.—This term has been loosely applied both to certain elevated mucous patches of secondary syphilis, and to mere bunches of non-syphilitic skin about the anus. The syphilitic cases will disappear on using resolute antisyphilitic internal medication. The non-syphilitic varieties require the scissors if they are troublesome.

Fibrous, Fatty and Cartilaginous Tumors of the Anus and Rectum.—These are rare. If they become troublesome, they must be removed by excision.

Cystic Tumors.—These, if troublesome, must be dissected out, or else have their interiors cauterized with potassa cum calce. Iodine and nitric acid are not sufficiently energetic for the purpose.

CHAPTER X.

MECHANICAL OBSTRUCTION OF THE RECTUM.

Mechanical obstruction may arise from stricture, from foreign bodies, from congenital malformation, from the pressure of adjacent tumors or displaced organs, from spasm of the sphincter, from large polypi or other benign growths in the rectum, and from malignant tumors.

Stricture.—We mean by this term a non-congenital, or acquired narrowing of the passage. Probably a majority of the cases are due to phagedenic ulcers, some venereal, and others not, which first spread around the inner surface of the rectum and destroy the mucous membrane in an irregular band, nearly or quite around the circumference. As the ulcer grows older and heals, or attempts to do so, its cicatricial circle or cylinder contracts and narrows the passage. It is said that tertiary syphilitic deposits may cause stricture even without any ulcer, and be cured by iodide of potassium, so that the iodide thus becomes a means of diagnosis. At first little notice is taken of the obstruction by the patient, but at length he observes an increased difficulty in expelling solid fæces, and discovers that they are thin or slender, as if driven through a small orifice, unless the obstruction is so high up that the fæcal mass re-forms itself in the cavity between the stricture and the anus. In some cases the flat, tape-like form of the fæcal discharge is produced only when a violent straining forces the stricture down through the anus, while the round form follows all milder efforts, the anus then resuming its function and moulding the mass. If the destruction of mucous membrane does not extend entirely around the rectum, the symptoms of obstruction at

length cease to increase, and the case may spontaneously improve by the dilatation of the uninjured portion of mucous membrane effected by the daily passage of fæces. If, however, the ulcer is a complete cylinder, it may go on contracting until the stoppage is complete, and the patient, if not relieved promptly, may die with the usual symptoms of mechanical obstruction of the bowels. When the obstruction has become so decided that the patient habitually fails to empty the bowels, the abdomen is usually found full and tympanitic. The portion of intestine just above the stricture becomes dilated, and frequently its muscular coat is hypertrophied from its constant straining, but at other times is thin from expansion. Ultimately the mucous membrane is prone to become inflamed and ulcerated, and sometimes is perforated, producing either cellular abscess, or fatal peritonitis, according to the site of the perforation. When there is no perforation there is often a low grade of chronic peritonitis with adhesions, pain on exertion, vomiting, etc. Even if no perforation or peritonitis ensues, death will follow a complete mechanical obstruction in a short time.

Examination.—Preliminary to treatment, the surgeon must make a careful physical examination. Generally the finger will suffice, but not always. The rectum, having been emptied by enema, and the patient lying either on the side or back, the index finger is lubricated and inserted, and will generally reach the stricture. If the point can be carried through, one can determine whether the strictured portion is short, or whether it continues on for some distance. If the obstruction is beyond the reach of the finger, a rectal sound with a curved staff, with about six interchangeable bulbs of different sizes, will enable the surgeon to ascertain the size and location of the stricture. (See Fig. 5 on page 14). If it be very small, a britannia metal urethral sound may be required. The ordinary straight, stiff rectal bougies are useless here, and the flexible ones of Wales' pattern are little better, as the position of the tips cannot be known on

account of their flexibility, unless a steel staff be inserted through them. There are often difficulties in distinguishing a stricture from an obstructing rectal fold, but in such case great advantage is obtained by distending the gut with air, or with warm water, which smooths the folds away, and diminishes the perplexity. Metallic sounds must be used with the greatest gentleness, lest they perforate some spot thinned by ulceration, or fragile from other diseases. They give imperfect information because they may be stopped by rectal folds where no stricture exists, yet if they pass, the fact is important because it proves that there is at least no stricture smaller than the size of the bulb passed. If the stricture is only a little beyond the finger, it is well to anæsthetize the patient and insert the whole hand of either the surgeon or a selected assistant. The hand should be narrow, well lubricated, and the fingers and thumb gathered into a cone, and slowly pushed through the sphincter. After passing the sphincter, the force used must be very moderate, as the destruction of the elasticity and strength of the walls of the gut by the disease, give a possibility of tearing through into the peritoneal cavity, an accident which has occurred more than once.

Treatment.—Constitutional treatment may be required to remove whatever unfavorable diathesis be present, especially the syphilitic, and in partial stricture, on which no operation is at present intended, it is often necessary to use laxatives, to keep the fæces in a semi-fluid condition, as well as tonics and proper regimen to sustain the patient. Medical treatment alone will rarely cure the stricture itself, however, except in a few of the syphilitic cases, and those pseudo-strictures which consist merely in spasmodic action of the sphincters.

The operative treatment consists in dilatation, divulsion, and incision both internal and external, to which may be added colotomy.

Dilatation.—This is generally commenced by gently

inserting one or more fingers, if the stricture is within reach, and repeating the process at intervals of two to six days. The parts should be benumbed with cocaine a few minutes beforehand, the finger well lubricated, and slowly inserted. When the orifice becomes too large to be further distended by the finger, some conical rectal bougie is to be employed, of which Wales' rubber instruments are the best now in market. These are to be inserted very slowly, increasing the size gradually, so as neither to overcome the patient's fortitude, nor to risk bursting through into the peritoneal cavity. Mechanically speaking, any stricture within safe reach can be gradually dilated to any desired size, exactly as is done with the strictures of the urethra, but the greater size of the rectum, and its more overpowering nervous sym-

FIG. 39.—SARGENT'S RECTAL DILATOR.

pathies, render it much more difficult to maintain the fortitude and tolerance of the patient at a working standard. Still, by gentleness, encouragement and patience, great results can often be obtained by the gradual method. It is claimed that a rapid dilatation can be obtained by electricity passed through a metallic bougie pressing into the stricture, just as is done in the urethra, but we have not personally tried it.

Wales and Davison have each devised dilators, consisting of elongated rubber sacs, which are inserted into the stricture in the empty condition, and then made to expand by forcing in air or warm water. Very good results can be obtained by the use of them.

Divulsion.—When the stricture is well below the peritoneal folds,—that is to say, within an inch of the verge,—it can be rent open by force, provided the vagina in the female,

or the urethra in the male, are not involved in the substance of the induration.

In performing this operation the patient is anæsthetized, and the usual method is either to nick the inner edge of the stricture in several places with the bistoury, or as is the better way, nick in one place only and that directly backwards toward the sacrum, so as to guide the rupture in a direction where there are few vessels, and no peritoneum. The divulsion may be made by the fingers, by conical rectal bougies, or by any of the mechanical divulsors invented for that purpose, of which there are several. We generally restrict ourselves to the fingers, and to Wales' rubber bougies, preferring them to the weapons of steel. The proper cases for divulsion are those where the patient's fortitude is not persistent enough for gradual dilatation, or when other circumstances compel haste, and at the same time the stricture is quite near the anus. The sole advantage of the method is that there is less danger of hæmorrhage than in cutting. When the stricture is situated much more than an inch above the verge, the danger of tearing into the peritoneum begins, and divulsion is then correspondingly dangerous. In such cases it is to be avoided unless some urgent reason exists for braving the peril. In old and debilitated patients there is some danger of shock after divulsion, and deaths sometimes occur.

External Incision, or External Proctotomy.—In some cases where both dilatation and divulsion are unadvisable, we must either put the patient to a little risk of a smart hæmorrhage, or else relieve him by the rather undesirable operation of colotomy, or operate by cautery. When proctotomy is done with the cold knife, the method is as follows: The rectum being emptied and the anus shaved, the patient is anæsthetized and placed either in the lithotomy position, or on his right side with the knees drawn up. The left index finger is oiled and inserted up to the stricture with the palmar surface toward the sacrum. A straight probe-

pointed bistoury is then made to glide along the finger and through the stricture, if the latter is low down, or only to it, if higher up. The knife is then swept backward along the mesial line until the heel comes close to the point of coccyx, while the point rests on the finger in the rectum. A free gush of blood follows, but the wound can be easily spread wide open and the bleeding vessels secured. Then, if the stricture is not already cut, the knife is passed into it and cut backward into the wound already made. The wound is then tightly packed with lint and the patient sent to bed, using opiates if needed.

The dread of hæmorrhage has caused improvements to be devised. The incision may be made from without inwards, by the galvano-cautery knife, and most of the danger of hæmorrhage avoided. A third method is to insert a trocar into the skin below the tip of the coccyx, and push it straight to the end of the finger inserted as before said into the rectum. Withdrawing the steel, and leaving the canula in place, a platinum wire is carried into the rectum and brought out of the anus. The canula is drawn out, the ends of the wire connected with the battery, and the loop is made slowly to burn its way outward by gentle traction upon it. A fourth plan is to insert the trochar as before, carry the chain of an écraseur through the canula and out the anus, and attaching the chain to the instrument, crush the tissues through in the usual manner. A fifth plan is to grasp the tissues in the curved jaws of the écraseur-forceps of our invention, and divide them in that way. The écraseur methods, however, are not as safe from risk of hæmorrhage as the galvano-cautery.

The wound is dressed antiseptically and left open during healing. The retention of fæces is not always perfect afterwards, but the condition even then is preferable to that following colotomy, for which it is a substitute.

It is a curious fact that even when a stricture is too high up to be actually divided, the division of the sphincters

in proctotomy still, in some way not well understood, often greatly relieves the obstruction.

Internal Incision, or Internal Proctotomy.—This is performed by dividing the stricture internally, directly backwards toward the sacrum, and sometimes, also, but with care, directly forwards a moderate distance. By thus keeping in the mesial plane the vessels divided are small and the risk of hæmorrhage is not great, yet surgeons dislike to perform the operation because the sphincters are intact, and hæmorrhage, if it occur, will be concealed from view until it has attained dangerous proportions, and at the same time is in situation where measures for the suppression of it are very difficult of application. Still peculiar circumstances may sometimes compel one to take the risk. The operation is performed as follows:

The patient being placed in the lithotomy position, or else made to recline on the right side, the finger is passed in and the point of it cautiously insinuated through the stricture, with the palmar surface toward the sacrum. A straight probe-pointed bistoury or a lithotomy knife is then made to glide along the finger through the constriction, and then to cut boldly backward toward the sacrum. If a narrow ledge or shelf exists in front, an incision may also be made in the mesial plane forward, but not so far as to endanger the peritoneum, the vagina, nor other important organs.

Lumbar Colotomy.—If the condition of the rectum is such that no operation of reasonable safety can restore the natural route of the fæces, it is necessary to perform left lumbar colotomy, which is done in accordance with the usual directions on that subject in all surgical text books. A description of the operation will be given in the chapter on Malignant Tumors.

Obstruction from Foreign Bodies.—Foreign bodies occasionally obstruct the rectum. Thus, a farmer in Michigan fell upon a blunt stake of half-decayed wood, which

entered the anus some distance and broke off, leaving the fragment in the interior. It was extracted, and the patient recovered.

A laboring man, accustomed to bolt his meals with great rapidity, presented himself, with obstruction and sharp, cutting pains of the rectum. Nothing was visible to external inspection, but the finger being introduced, discovered a large, jagged piece of mutton bone lying crosswise just above the verge.

In another case, a crushing fracture of the pelvis dislodged a large flake of bone, and drove it into the rectum two inches above the anus.

A case is on record where a man suffered such violent pain from the presence of stone in the bladder, that, in his desperation, he seized a large, jagged stone, five inches long, and forcibly thrust it into his rectum completely above the sphincter.

Various slender but elongated objects which have been swallowed by the patient, such as nails, needles, fish bones, chicken bones, splinters of wood, etc., may make their way without difficulty downward until they land crosswise above the sphincter, when trouble and obstruction for the first time ensue. In such cases there may be some dexterity required to extract the foreign bodies with the least irritation, but no formidable difficulty occurs. The foreign object can usually be turned so as to bring it down easily; but if not it may be necessary to cut it in pieces with bone pliers, or even to incise the border of the anus to remove it.

Benign Tumors in the Rectum.—Polypi and other benign growths sometimes become so large as to obstruct the canal. In these cases they must be removed by the measures already described under the head of "Polypus," or if the situation renders that impossible, then a lumbar colotomy may be required.

The malignant tumors will be discussed under a separate head.

Obstruction by Displaced Organs.—Frequently a retroflexed or retroverted fundus of the uterus presses upon the rectum sufficiently to make a partial obstruction. Similarly the descent of enlarged ovaries, coils of intestines, etc., into the sac of a hernia alongside the rectum may cause material embarrassment in its functions. The only cure is to replace the wandering organs where they belong.

Pressure of Tumors and Swellings Outside the Rectum.—Fibrous, cartilaginous, and bony tumors of the pelvis sometimes obstruct the rectum. Cartilaginous growths especially may fill the entire cavity, and make a very great obstruction. In some cases these obstacles can be removed by carefully planned operations, which will have a better hope of success if done early. Sometimes the form and location of the growth admits of a complete operative success in relieving the rectum, even when the whole tumor cannot be removed. The excision of some projecting edge or angle may be all that is needed. If, however, the obstruction goes on increasing, and becomes so nearly total as to threaten the destruction of the patient's health, or life, lumbar colotomy must be performed. There is a prevalent opinion among physicians that an artificial anus is a terrible thing, and not much preferable to death. This is an exaggerated view. True, an artificial anus is a source of some inconvenience, yet by the exercise of a little care and ingenuity, these inconveniences are greatly relieved, and the patient may make his life very comfortable to himself and agreeable to his friends.

Inflammatory swellings may so press upon the rectum as to impede the evacuations. They rarely effect a complete obstruction. If they should do so, it will usually be found that an abscess is present which must be evacuated, when the obstruction will disappear. A solid inflammatory swelling must be managed by antiphlogistic and antisuppurative treatment just as in other parts of the body. We never knew one to produce complete stoppage, but if

it should occur, a temporary artificial anus might become necessary.

Spasmodic Contraction of the Sphincter.—This is usually caused by fissures of the anus, or other irritation in the vicinity. It does not amount to complete obstruction, yet it may induce constipation. Usually the treatment consists merely in the cure of the fissure, or other local cause, but sometimes a forced dilatation is also useful.

Impaction of Fæces.—The cause of this condition is a long continued omission to perform the act of defecation, whether from paralysis of the expulsory muscles, spasm or involuntary contraction of the sphincter as in fissure of the anus, or in any other condition of the organ rendering defecation painful. The impaction may also be due to simple neglect of the patient or of his nurses to secure evacuations when there is long constipation, or to a torpid dementia of the patient causing the matter to be overlooked and forgotten.

In rare instances a large intestinal concretion has been known to come down and lodge at the sphincter, blocking up everything above it.

Whatever the cause may be, the hardened fæces gradually fill and distend the rectum with a somewhat firm and consistent mass which at last the patient is unable to expel. Similar impactions sometimes occur higher up in the colon and even as high as the cæcum itself.

The diagnosis is not difficult if the finger is introduced into the rectum, but if that test be omitted all sorts of errors may be possible. A traveling foreigner once called on the writer to see his wife, who was, he said, in labor. The absence of any sign of a gravid uterus led to an examination of the rectum, which was enormously distended with hardened fæces. The griping pains provoked by the expulsory efforts led the woman to suppose she was about to have a miscarriage. Sometimes the irritation of the mass provokes a frequent catarrhal discharge with pain, etc., but no full

evacuation. Such cases have even been called diarrhœa, and the condition aggravated by the use of remedies which stop evacuations.

The reflex irritation sometimes provokes a dry cough, in accordance with the general law that irritations of the anus have a reflex irritating influence on the larynx, a fact known to some professional singers, who carefully observe their own condition. The fæcal mass, examined from the vaginal side, has often been supposed to be a tumor.

If the obstruction goes to an extreme degree it may bring on vomiting as in mechanical obstructions of the bowels generally.

The treatment is not usually difficult. In mild cases a cathartic, or even a large injection will often suffice. In others the fingers, either alone, or aided by such a scoop as is found in lithotomy cases, or a large curette will accomplish such a reduction of the mass as will allow the work to be finished by cathartics and enemas. In married women two fingers in the vagina assist very much in forcing down the masses. In bad cases it is necessary to anæsthetize the patient, dilate the anus, and then with the fingers and a scoop, or a strong desert-spoon patiently dislodge the material. As there is often a large reserve of material in the colon above, cathartics are needed until the whole is emptied.

CHAPTER XI.

MALIGNANT TUMORS OF THE ANUS AND RECTUM.

These, as in other parts of the body, may be carcinomas or sarcomas. The carcinomas are the most numerous of the two in this locality, but whatever their relative frequency, many authors, including Cripps and Kelsey, include both under the general term cancer, while others apply that name only to the carcinomas. The sarcomas are rare in this location, but deport themselves when found much as they do elsewhere.

Causes.—The etiology of both forms of malignant disease is unknown. Much has been said about a hereditary tendency to cancer. We published some years ago statistics of inquiries into the ancestry of one hundred cancer patients, showing that they had almost exactly the same amount of that disease among their parents and grandparents as prevails on the average among the adults of the whole community. About the same time, Mr. Harrison Cripps, of London, showed that the parents of cancer patients in St. Bartholomew's Hospital had the same average amount of cancer among them as is found among the adults of the whole English people, according to the statistics of the Registrar General. These careful analyses of masses of facts, joined to others of the same character, tend to weaken the whole theory of hereditary transmission of cancer, whether in the rectum, or elsewhere. Turning to other causes, we find that the statistics of the United States Census Bureau show a clear relation between cancer and climate, as we have else-

where proven by collating the figures of three successive decennial censuses of the United States. It is clear, that in this country cancer prevails most near the sea, and least at a distance from it; also, that at equal distances from the sea, it abounds decidedly more at the north than at the south. What this peculiar influence is, which is found prevailing at the north, and near the sea, is utterly unknown. The clinical phenomena constantly suggest that it is a microbe introduced into the body from without, but the efforts of microscopists to identify it, though claiming success, still require fuller confirmation. At present we must be content with a degree of uncertainty. The advocates of the microbe theory point out, in support of that opinion, the undeniable fact that cancer of the rectum is most frequent near the outlet, and diminishes as we go upward, as if it had its origin in some germ entering the parts from external sources,—a fact of considerable weight, though not decisive of the question. Mr. Cripps has given in his valuable work a very careful discussion of the etiology of rectal cancer, and supports the same view. ("Cripps on the Rectum," p. 315.)

Carcinoma of the rectum often spreads in a flat stratum between the mucous membrane and the sphincter, where it feels somewhat as if a foreign body had gotten itself bedded in the tissues, but in other cases it is a more rounded or irregular mass. In either case, it gradually extends, infects the mesenteric glands and the liver, and, in short, destroys the life, like any other carcinoma. Occasionally we see the colloid forms, as in the upper viscera.

In the majority of cases ulceration of the surface takes place, but not rapidly enough to prevent the increase of the size of the mass, so that in many instances complete obstruction of the rectum occurs. The pathology of the disease is very interesting, but our limits do not permit entering upon it. We can only refer the reader to an admirable discussion of the subject in "Cripps on the Diseases of the Rectum," pp. 288 to 370.

Diagnosis.—Except in very early stages it is not usually difficult to distinguish rectal cancer from other growths. If, however, there is ground of doubt, the location is such that it is easy to excise a sample, and subject it to microscopic examination. The fungous form of cancer might be taken for an innocent villous growth by one unaccustomed to distinguish them. However, the following characters will guide one generally to a correct conclusion: Villous innocent growths are usually pedunculated; cancers rarely so. Villous tumors, unless ulcerated, are bathed in healthy, transparent mucus; cancers discharge offensive, dirty-looking matter, which is neither mucus nor healthy pus. Villous tumors are soft, but yet somewhat tough; while the fungous cancer, though somewhat soft, is less so, and yet breaks readily under the finger nail, and easily bleeds. The villous tumor springs from a soft, healthy mucous membrane, which glides freely on the deeper coats; while the cancerous fungous grows from an indurated lump, or patch, in the bowel, which seems fixed or rigid.

In suspected rectal tumors, where the diagnosis is doubtful, a small specimen should be taken for microscopic examination, and if the case is truly malignant, the typical structure of carcinoma, or of sarcoma, will usually be found by a competent microscopist. The situation renders it easy to excise a sample. If the village practitioner be not skilled in microscopic pathology, he can place the sample in a vial of alcohol, and send it to a competent pathologist in some larger town.

Treatment.—This may aim at a radical cure, or at simple palliation. The radical cure consists in the complete extirpation of the tumor, and of a stratum of apparently sound tissue around it. Numerous variations have been devised in the details, but the following description will give the plans mainly adopted by the best surgeons, among whom Volkmann has perhaps given the most systematic account:

1. When the tumor occupies a circumscribed spot only on the circumference of the lower rectum, or of the anus, we first make a thorough dilatation of the anus, and then boldly excise the tumor, cutting far enough from it to take away all the diseased tissue. If the tumor is somwhat high up, we pull it down with vulsellum forceps, and if the dilatation of the anus does not sufficiently expose it, we take a bistoury or scalpel and divide the posterior margin straight back to the coccyx. After the removal of the growth we study the form and dimensions of the wound, and so far as its extent will permit, close it with sutures, and guard it from serous infiltration by drainage tubes.

2. In some cases the tumor involves the entire circumference of the rectum, but has not infected the anus. We then divide the sphincter backward to the coccyx, and also forward into the perineal region. The posterior incision goes deepest. Drawing the two halves of the anus asunder, the growth is taken out, and the gap is filled by drawing down the mucous membrane and stitching it to the cut margin below. The two halves of the sphincter are next closed with deep sutures, and a drainage tube inserted into the posterior seam.

3. In other cases the growth not only occupies most or all of the circumference of the rectum, but the anus also. We then proceed as follows: Dividing the anus behind and before, as already mentioned, we commence outside the line of disease, and dissect upward outside the gut until we get above the cancer. If a hole should be cut into the peritoneum, it is plugged with a well carbolized sponge. The rectum is next cut off, the tumor removed, and all bleeding vessels secured. Next, the opening in the peritoneum is sewed up, and if the bowel will yield to tension, it is drawn down and stitched to parts below. However, this cannot always be done.

The operation is a bloody one in spite of all care, and every preparation must be made for promptly arresting hæmorrhage.

The French surgeons have used the écraseur instead of the knife to divide the tissues, thus diminishing the risk of hæmorrhage, but probably increasing the shock. Cripps devised an ingenious method of making a strong whip-cord do service in dividing the tissues, instead of the chain of the écraseur. The platinum wire of the galvano-cautery and the galvano-cautery knife are used with excellent effect to avoid hæmorrhage. Verneuil, of Paris, uses both the écraseur and the galvano-cautery knife in the same operation. The écraseur-forceps of our own devising is more convenient of application than the chain écraseur. It is sometimes necessary to excise the coccyx and a little of the sacrum to enable one to reach the rectum at a sufficiently high point.

The mortality of the high operations is pretty heavy, but that of the low ones less so. The peritoneum, though variable, comes down on the average pretty near to the highest point which can be reached by the index finger; and this point is called by Kelsey the "danger line."

Taking all cases together, we have the following table:

Authority.	Total Cases.	Died of Operation.	Diseases Known to have Returned.	Disease not returned at times from a few months to three years.
Cripp's Collection..	64	11	20	34
Allingham	13	0	13	0
Billroth	Not stated.	13	Not stated.	0

These statistics are imperfect, and therefore unsatisfactory, but they show at any rate that some cases are permanently cured.

Dieffenbach claimed thirty cases permanently cured, but in his day the means of accurate diagnosis of carcinoma did not exist, and the correctness of his statistics is more than doubted.

Sarcoma of the Anus and Rectum.—The diagnosis from carcinoma must be made, if at all, by the microscope.

Its early removal is as urgent as that of carcinoma, and its prospect of success is much better.

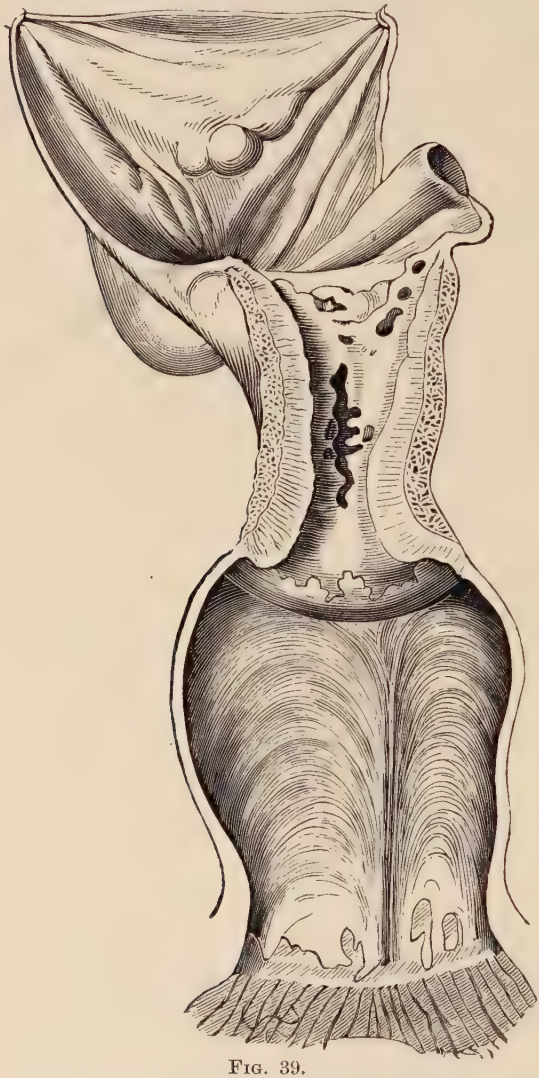

Fig. 39.
Cancerous Stricture of the Rectum (*Esmarch*).

Palliative Operations.—Malignant tumors are prone to block up the anus and produce first a stricture, and gradually a total obstruction; hence, in cases too far gone to admit of excision, we must combat the occlusion. As the stricture comes on gradually, it can usually be overcome by inserting from time to time a conical rectal bougie, giving an anæsthetic if necessary. This ruptures the obstructing belt, and gives renewed ease each time. In some cases it is justifiable to scoop away some of the mass with the curette. If the obstruction has become nearly complete and extends so

high that it cannot be locally mastered, we must resort to left lumbar colotomy, which relieves the distress and obviates the immediate danger. In short, it enables the patient to evacuate the bowels in comfort as long as the disease in other parts permits him to live. As the disease progresses, anodynes may be used according to the necessity.

Colotomy for Cancerous Occlusion of the Rectum.— Some writers have tried to introduce the polyglot word "Colostomy," so as to get in the Latin word *os*, a mouth, between the two Greek elements *colo* and *tomy*, intending apparently to express the idea of cutting the colon to make a mouth. Aside from the absurdity of calling an anus a mouth, it is bad literary usage to mix two languages in coining a new compound term. The only way to make a correct Greek derivative for this absurd purpose would be to say "Colostomatomy," but this would be an intolerably long and harsh word. There is little need of lugging in a Greek or Latin root to express the motive of the operator in making the incision. "Colotomy" sufficiently indicates the operation itself.

In all ordinary cases, the opening in the left lumbar region behind the peritoneum, is to be preferred. This is sometimes called left lumbar colotomy, or Calliseu's operation. Its merit is that it does not open the peritoneal cavity, and this is very important, for in spite of occasional assertions to the contrary, careful surgeons know very well that antiseptic precautions have only lessened, but not abolished, the dangers of laparotomy.

The method of procedure is as follows: The skin of the left lumbar region should be scrubbed with soap and an antiseptic solution several times during the thirty-six hours preceding the operation, and during the last six hours should be kept moistened with the same. The patient is anæsthetized and laid on a table in a good light. At this point some writers have recommended to distend the bowel by injecting air into the anus, so as to make the colon larger

and easier to find. The grimness of this joke will be obvious if we consider that the anus in these cases may be closed by the cancer so effectually that neither air, nor anything else, can be gotten through. However, there is little need of clysters. The bowels are usually well distended already with their retained contents.

The patient being laid with the right side down and a cushion under the loin, the surgeon proceeds to ascertain the position of the descending colon. The area, or field of operation, is bounded above by the last rib, below by the crest of the ilium, behind by the longissimus dorsi, and the common mass of the *erectores spinæ* muscles, and in front by a perpendicular line carried upward from the center of the crest of the ilium. In this quadrangle lies the descending colon with its axis about half an inch posterior to the vertical line drawn upward from the center of the crest of the ilium. The center of the crest is best found by running a line from the anterior to the posterior spinous process, and erecting a vertical one from its center. Mark the position of the axis of the intestine, as above ascertained. Now make an incision through the skin about four and a half inches long, whose center shall cross the line marking the axis of the gut. The incision should be oblique, passing downward and forward in the same direction that a rib might be supposed to assume if one existed at that level, and should be about half way between the last rib and the crest of the ilium. This direction, however, is not imperative. If special circumstances require, it can be perpendicular or transverse. Dissecting carefully down, the latisimus dorsi, the thick border of common mass of spinal muscles and the anterior edge of the quadratus lumborum will come to view, and external to them the external oblique muscles and its fascial origin. Divide the fasciæ and the external oblique muscle on a grooved director, and also the anterior or external border of the quadratus lumborum. That portion of the gut not covered by peritoneum, lies under the border of

the quadratus. The loose fat connected with the colon and kidney is now exposed, unless it has been removed by emaciation. Displace the fat by the finger and the gut will come to view, and may be recognized by its large size, its greenish color, the presence of one of the longitudinal muscular bands and its tendency to sacculation of the walls. Now at a point three-quarters of an inch in front of the perpendicular axial line of the gut, pass a semicircular needle through the skin of one edge of the wound down into the gut and thence out again about half an inch from the point of entrance, and out through the skin of the other edge of the wound, and draw after it a stout ligature. Repeat this process behind the axial line, and by these loops raise the gut up into the wound. Next, incise the gut parallel to the incision in the skin nearly from one loop to the other. A blunt hook will now easily draw out the loops from the inside of the gut, and by dividing them, four ligatures are at once produced, wherewith to tie the cut edges of the intestine to the skin. A few more stitches are required to support adjacent parts.

After the surplus contents of the intestine have escaped, the wound can be dressed with oakum, or any other porous antiseptic absorbent. The stitches should remain until, by their looseness, they show that they are no longer useful.

CHAPTER XII.

MALFORMATIONS OF THE RECTUM—PRURITUS ANI.

Children are occasionally born with no outlet to the bowel. In some instances the obstruction is merely a thin

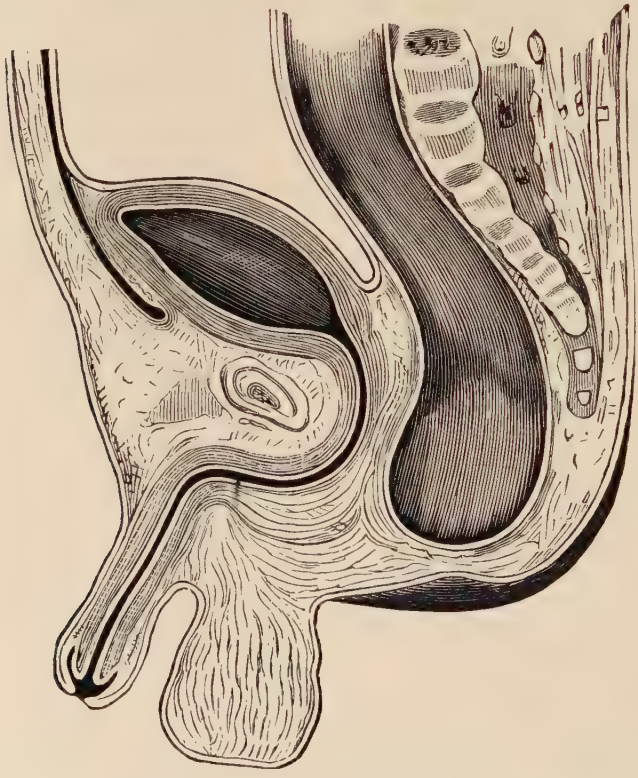

FIG. 40.—IMPERFORATE ANUS (*Esmarch*).

membrane across the anus, through which the dark shade of the meconium shows. In other instances the anus and lower

rectum is perfect, but there is a septum higher up. In other cases the whole rectum is wanting, and even some portion of the colon. There are also instances where the rectum ends in the vagina or in the bladder.

Treatment.—Where there is only a thin membrane

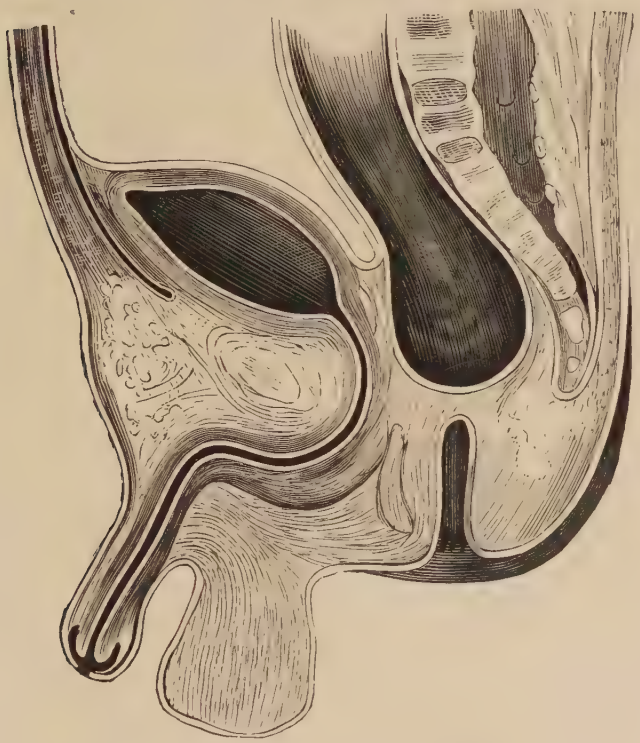

FIG. 41.—IMPERFORATE RECTUM (*Esmarch*).

closing the anus, it is easy to divide it by a crucial incision, and cure the patient.

If the rectum stops higher up, then we are in doubt as to where the *cul de sac* is to be found. It is proper, however, to seek for it. The patient being anæsthetized, an incision is made from the center of the spot where the anus should be, directly back to the tip of the coccyx. If the *cul de sac* of the gut is there at all it will be in or below

the hollow of the sacrum. The incision is therefore cautiously made on the middle line, close to the sacrum, and, if needful, the coccyx may be excised to enable the operator to get higher up. The gut is felt for with the finger, and if found is opened, and if possible drawn down and stitched to the incision as near to the normal location of the anus as its extensibility will permit without much tension. In this blind search one feels very uneasy as he goes deeper. If child has been born long enough to generate gas in the intestines, the resonant *cul de sac* of the rectum, if it exists there, may be detected by percussion on the sacrum. We have found, also, that by taking a small stick, five inches long, with the ends squarely cut off, and inserting one end into the wound, and against any tissue suspected to be the end of the gut, we can elicit the tympanitic sound by tapping with the finger against the outer end of the stick if the gut is really there. If the gut is not found, then a lumbar or an anterior colotomy must be made above, in accordance with the usual rules for that operation.

Pruritus Ani.—The causes of this troublesome and obstinate complaint are numerous. In the first place we have here nearly all the itching skin diseases which may occur elsewhere, such as eczema simplex, eczema marginatum, erythema and herpes, and without going into tedious details, we may refer the reader to any modern treatise on skin diseases for the description and diagnosis. Owing to the great sensitiveness of the anal verge, itching of the part is apt to have a greater intensity than elsewhere. Those skin diseases which are due to a fungoid parasite, such as the tricophyton, etc., need careful diagnosis by the microscope in order to determine their character.

A frequent cause of pruritus is the presence of pin worms, or *oxyuris vermicularis*, in the rectum. These produce most trouble in the evening. They may often be found with the speculum, but the surest way is to watch the successive evacuations for some time. In some cases they seem

to be easily cured by various remedies, but in others they are never all exterminated, and though made seemingly to disappear for a few weeks or months, yet they multiply again, and require occasional treatment throughout life. Pediculi are sometimes the cause of the itching.

Pruritus ani is frequently a neuralgic trouble, caused by irritation in other parts. For instance, little ulcers or inflamed spots among the sacculi Horneri, just above the verge, frequently cause great itching of the verge itself. Internal piles at the same level may have a similar effect.

It is curious, also, that stricture, and inflammation of the upper portion of the urethra, sometimes cause rectal itching. In other cases it appears to be due to some lesion of the sensory nerve fibers surrounding the verge, for it yields to the nerve stretching produced by a forced dilatation of the anus.

In other instances it is directly or indirectly due to disease of the spinal cord and brain.

Finally, it may be caused by depraved and irritating secretions sent down by the rectum, colon, or higher bowels.

Treatment.—The first step is a complete examination of the parts externally and internally. We thus ascertain if there is any eruption of the skin, any ulcers, inflammations or hæmorrhoids present. Ascarides and pediculi are to be searched and watched for. In males the question of stricture or other causes of irritation in the upper half of the urethra are to be decided. If eczema is present, it may require arsenic internally and local treatment externally, as in eczema of other localities. If tricophyton or other parasitic fungi are found, they must be destroyed. If ulcers, inflamed spots, fistulas or internal piles exist, they must be radically cured. If stricture of the male urethra is found, or cystitis in either sex, these diseases must be removed. Constitutional disorders must also be treated, constipation corrected, and good digestion secured. If no constitutional or local dis-

eases are found, the itching is probably a neurosis. If due to disease of the brain or spinal cord these organs are to be treated; if to the nerves themselves surrounding the anus, the dilatation of the anus should be tried.

Local applications are often successful, and yet in many cases they totally fail. It is well to have a good list of them for trial.

In case of pediculi, mercurial ointment is sufficient. If ascarides are present, a weak solution of carbolic acid injected into the rectum at evening is at least a temporary help. After trying varied vermifuges, we find that sulphur given internally seems to be one of the best destroyers of the worms, but it does not make absolutely complete work. It should be followed by some purgative containing rhubarb and aloes, or other stimulants to the mucous follicles of the lower bowel. Whenever the patient has a pretty complete emptying of the bowels with free discharge of rectal mucus, he invariably remains free from trouble for a considerable period, as the habitat of the worms is in the mucus, and mucus evacuations sweep them out more effectually than any others.

When the microscopic fungi are the cause, sulphur, sulphurous acid, bichloride of mercury, and iodine can all be used in quantities and strength adapted to the case. Dr. Carson "cuts" a drachm of camphor, in a trifle of alcohol, and then rubs it up in an ounce of lard, and looks upon it as almost a specific, if well rubbed upon the anus, and also put into the rectum. In all cases the parts should be well washed with soap and hot water before applying the local remedies,—and in many, a washing out of the rectum with the same, through a double canula, is also necessary. When simple chafing is the cause of pruritus, a powder of subnitrate of bismuth, precipitated chalk and starch, is curative.

Compresses of hot water, as hot as they can be borne, relieve many. Compound tincture of green soap, made

according to the following formula, is added by Kelsey to the hot water compresses.

℞ Saponis viridis,
Ol. cadini,
Alcohol, ... āā ℥j.

Misce.

The following are useful:

℞ Chloroformi ..... fl. ℥j.
Ung. oxid. zinc ..... ℥j.

Misce.

℞ Mur. cocaine ..... gr. xv.
" morph ..... gr. x.
Acid carbol. cryst. ..... ℥j.
Tinct. aconiti rad ..... fl. ℥iij.
Unguent. petrolii ..... ℥j.

Misce.

This must not be inserted inside the verge in large doses.

Allingham highly praises the following:

℞ Liquor, carbon. detergentis (Wright's) ..... fl. ℥j
Glycerinæ ..... fl. ℥j.
Zinci oxid pulv.,
Calamin. prep., ... āā ℥ss.
Sulphuris precip. pulv ..... ℥ss.
Aquæ pur ..... ℥vj.

Misce.

Also this by the same author:

℞ Sodæ borat ..... ℥ij.
Morph. hydrochlor ..... gr. xvi.
Acid, hydrocyan. dilut ..... fl. ℥ss.
Glycerinæ ..... fl. ℥ij.
Aquæ ..... fl. ℥viij.

Misce.

Kelsey advises this:

℞ Acid, carbol ..... ℥ss.
Glycerinæ ..... fl. ℥j.
Aquæ ..... fl. ℥iij.
Misce.

It is pretty strong, and often requires to be diluted.

Kelsey also advises the following:

℞ Chloral ..... ℥j.
Camphoræ ..... ℥j.
Ung. petrol ..... ℥j.
Misce.

℞ Menthol ..... ℥j.
Ol. amygd. dulc ..... fl. ℥j.
Acid carbol ..... ℥j.
Zinc. oxid ..... ℥ij.
Cerat. simp ..... ℥ij.
Misce.

℞ Ung. picis ..... ℥iij.
" belladon ..... ℥ij.
Tr. aconiti rad ..... fl. ℥ss.
Zinci oxid ..... ℥j.
Ung. rosarum ..... ℥iij.
Misce.

When any of these are found too strong they require to be diluted or weakened. Those containing powerful narcotics must not be inserted in too large doses into the rectum.

Allingham finds that the mechanical pressure of a hard pad bound against the anus, or the insertion of a smooth hard rubber plug into the rectum is a substantial relief to some patients.

Nerve Stretching.—A sort of nerve stretching accomplished by forcibly dilating the sphincters has a curative

effect on some obstinate cases of pruritus, which are probably to be classed as neuroses.

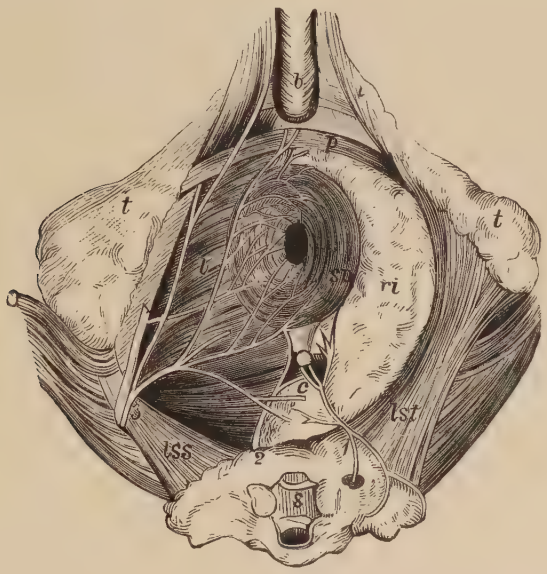

FIG. 42.—NERVE DISTRIBUTION ABOUT THE ANUS.

1. Sacral Nerves; posterior root distributed to surface of coccyx and external sphincter. 2. Anterior root, to external sphincter. 3. Pudic nerve and its branch, the inferior hæmorrhoidal. t. Tub. ischii. s. Sacrum. c. Coccyx. Sp. Ext. sphincter. I. Levator ani. p. Transversus perinei. ri. Ischio-rectal space.

The cut on this page (after Hilton) gives a clear representation of the local nerve distribution.

CHAPTER XIII.

MECHANICAL INJURIES.

Incised Wounds.—These may be caused by accident, or be a necessary result of operations. Owing to the location, purely accidental incisions are rare. A part of them are made by surgeons acting carelessly in the operation of lithotomy. They occur also from stabs and falls on sharp objects. The incision bleeds freely, and may do so dangerously. The gas, mucus and fæces also escape through the wound, and when the accident occurs in lithotomy urine also flows out at every micturition. The lithotomy cases are not very uncommon, and have occurred in the practice of nearly all the world's great lithotomists. Most of them heal spontaneously, but a few of them result in obstinate recto-urethral fistulas. There is also danger from peritonitis if the peritoneum is wounded, and of septic cellulitis and abscesses if fæcal effusion takes place into the connective tissue.

Treatment.—Incised wounds of the rectum which simply cut across the sphincter into deeper parts, but do not injure important organs, if seen early, may be closed with sutures as in other incised wounds. If the weapon has entered like a stab, tunnelling into the rectum, and therefore leaving the sphincter undivided, and is seen early, it may be sewn up on the rectal side in hope to get a union by first intention. If some days have elapsed since the wound, it is now a fistula and must be treated as directed in the chapter on that subject.

The rectal wounds made in lithotomy are sometimes among the most annoying of cases. True, they often heal

spontaneously, but if they fail of that, they become recto-urethral fistulas which often resist repeated operations. When the accident first occurs, there is no doubt that the incision would have the best chance if closed at once by sutures on the rectal side, but the lithotomist rarely has the requisite instruments with him at the time, and the opportunity passes by. Most authors write on this subject like perplexed men, but generally agree reasonably well on the following course:

If the primary operation for closing the incision has failed, or not been attempted, take plenty of time for expectant treatment, which results in the spontaneous cure of the majority of cases. The wound should be kept clean, the rectum kept empty, and a sheaf, consisting of three large soft rubber catheters, kept in the anus for drainage, that there may be no pressure of gas or mucus in it to force open the contracting fistula.

If this fails, and the remaining opening is very small and high up, success will sometimes be obtained by electro-cautery of the internal orifice, and the re-introduction of the sheaf of catheters. If this fails, or if the opening is both large and high up, then anæsthetize the patient, make a wide dilation of the rectum, and operate on the part as in vesico-vaginal fistula. The operation is somewhat difficult, and not sure of success. It is well, in some cases, to vary it by raising a flap of mucous membrane, and sliding it across the refreshed opening, stitching it to its new place. If this also fails, our best authors are silent as to what should be done next. Apparently, they are in despair, so far as these upper fistulas are concerned. In the lower ones, however, where the orifice is down near the sphincter, if plastic operations fail, success is pretty sure by simply cutting the fistula through into the gut, as in ordinary fistula in ano, and treating the wound as usual after that operation. Our opinion is that a bold extension of this plan to the higher fistulas would succeed, with some modifications to adapt it to the

locality. We have, however, not yet had occasion to test this opinion in actual practice.

When an incised wound has opened the peritoneal fold, it should be freely opened and explored, and the peritoneal rent sewed up. If blood and fæces have escaped into the cavity, they should be immediately washed out, even if a regular laparotomy has to be performed for the purpose.

Punctured and Lacerated Wounds of the Rectum.—These are the result of various accidents, such as farmers sliding from haymows upon pitchforks or sharp stakes, falls among crushed and broken timbers, and goring by the horns of cattle.

They are considerably dangerous when they lead to the effusion of the rectal contents into the loose connective tissue. In such cases they require free openings below for washing and drainage, and especially a thorough division of the sphincter, and, if the peritoneal cavity is opened, cleansing, sewing up, and possibly laparotomy may be required, just as in incised wounds.

Gunshot Wounds.—These are decidedly dangerous, not so much from the injury to the rectum itself, as from the wounding of the other organs by the same bullet. The Surgeon General's "History of the War of the Rebellion" gives 305 cases, with 44 deaths.

In many of these cases there is great effusion of rectal contents into the connective tissue, and sometimes into the peritoneal cavity. The urinary passages also, may be wounded, and contribute a deadly addition to the putrefying mass.

These cases require prompt action. It is well to extract the bullet, if possible, but that is not the chief thing. Hæmorrhage must be stopped, if troublesome, by any and all of the usual methods. Dr. Bushe long ago devised a cold compressor. A bladder was attached to a double tube in such a way that it could be inserted into the rectum, and strongly distended with ice water.

Dupuytren also called attention to the importance of preventing septic infiltration by such a thorough division of the sphincters as would insure a free downward drainage. At a later period, Simon, of Heidelberg, wrote a paper of great merit, strongly enforcing the same measure, and the whole experience of the world to this hour emphasizes these three precepts:

1. Divide the sphincter, in most cases, up to the track of the bullet, and keep the wound wide open.
2. Make other free incisions wherever needed.
3. Irrigate thoroughly with antiseptics.

In these ways the mortality of these serious wounds may be reduced to the lowest rate permitted by the concomitant injuries.

APPENDIX AND FORMULARY.

1. *Contract* of "Rectal Specialist."

The following is an exact copy (personal items being omitted) of a contract to cure piles shown us by a patient who was still suffering from that affection. The method used by the guarantor of the cure had been the hypodermic injection and the relief obtained had continued a number of years.

I hereby agree to pay to Dr. —— ——— & Co. *the sum of* .....[25 dollars].....*to cure me of*.....[*piles*]..... *with which disease I am afflicted. The above amount to be paid to* Dr. —— ——— & Co. *as soon as cure is effected. Cure agreed to be complete when the*.....[*tumors are removed*]..... *I further agree to go to the office of* Dr. —— ——— & Co. .....*and submit to treatment. Should I neglect or refuse to go and submit to treatment as above agreed, without some providential hindrance, then the above shall become due and payable the same as if I had been cured.*

[*Signed*] —— ———.

Rec'd payment ——— ———

The use of such contracts is not only unprofessional, but does nothing toward raising an operator in the estimation of intelligent patients.

2. For use upon instruments and fingers.

℞ Acid. boric.....℥ss—j
Ung. petrol.....℥j
M. Keep in collapsible tubes.

3. For instruments and fingers.

℞ Acid. carbol.....gr. xxv.
Ung. petrol.....℥j.
M. Keep in collapsible tubes.

4. For acute proctitis.

℞ Mucilage of starch.....℥ij
Tr. opii.....x-xxx

5. For acute proctitis.

℞ Iodoform.....℈i
Ext. belladon.....gr. v
Pulv. opii.....gr. x
Ol. theobrom.....q. s.
M. Ft. Suppositories No. XII.

6. For acute proctitis.

℞ Liq. carbonis detergent.....℥ii
Tr. krameriæ.....℥iv
Mucil. amyli.....*q. s. ad.* ℥iv
M. Liq. Inject ℥i morning and night.

7. For acute proctitis.

℞ Liq. bismuth.....℥i
Mucil. amyli.....℥vi

8. For acute proctitis (Dr. J. M. Matthews, Louisville).

℞ Sub-nit. bismuth.....℥j
Iodoform.....gr. x
Sweet-almond oil.....℥j
M. S.—Inject.

℞ Fluid hydrastis.....℥j
Aquæ.....℥j
M. S.—Inject.

℞ Listerine,
Aquæ.....ää ℥j
M. S.—Inject.

9. For chronic proctitis.

℞ Argent. nit.....gr. v.
Aq. dest.....℥ij
To be injected and removed by a subsequent enema.

10. For hæmorrhoids (where it is desired to confine the bowels after operation.—Allingham).

℞ Pulv. cretæ aromat. . . . . ℈j
Tr. opii. or liq. opii. sedativ. ♏ xv
Spts. æth. nit, ... ℥j
Mist. camphoræ . . . . . ℨiss

M. S.—To be taken night and morning for two or four days.

11. For hæmorrhoids (laxative).

℞ Magnes. sulph.
Magnes. carb.
Sulphur precipitat.
Sacch. lactis . . . . . āā ℨss
Pulv. anisi . . . . . ℥ij

M. S. One or two teaspoonfuls in water at night (Prof. G. T. Elliot).

12. For hæmorrhoids (laxative, "*Pil quattuor.*" Van Buren.)

℞ Ferri. sulph. exsiccat.
Quiniæ sulph. . . . . āā ℈ij
Ext. nuc. vomicæ.
Ext. aloes . . . . . āā gr. xij

M. Ft. pil. No. XL. S. One three times a day.

13. For hæmorrhoids (laxative, "*Pil salutis*").

℞ Ext. aloes.
Ext. hyoscyami. . . . . āā ℥j
Ext. nuc. vomicæ . . . . . gr. iv
Ol. anisi . . . . . gtt. iv

M. Ft. pil. No. LX.

14. For hæmorrhoids, with ulceration (Allingham).

℞ Bismuth. sub-nit . . . . . ℥ij
Hydrarg. chlor. mit . . . . . ℈ij
Morph. sulph . . . . . gr. iij
Glycerinæ . . . . . ℥ij
Ung. petrol . . . . . ℥j

M. S. Use in pile syringe.

15. For hæmorrhoids.

℞ Acid. tannic..... .....3ij
Ext. belladon.
Pulv. opii.....āā 3ss
Ung. petrol. (or lanolin).....℥j
M. S. Apply inside and outside.

16. For hæmorrhoids.

℞ Cocaine hydrochlor... ....gr. x
Ol. Theobrom.....q. s.
M. Ft. suppositories No. XV.

17. For hæmorrhoids (Ball).

℞ Morph. hydrochlor... ....gr. x
Ext. belladon.
Acid. tannic.....āā 3j.
Vaselin.
Lanolin .....āā ℥j
M.

18. For eczematous external hæmorrhoids (Ball).

℞ Liq. carbonis detergentis....℥j
Liniment. calcis.....℥v

19. For inflamed external hæmorrhoids (Yount).

℞ Cocaine hydrochlor.....gr. v
Ext. belladon.
Ext. opii.
Ext. aconite.
Ext. stramonii.....āā 3ij
Glycerinæ.....3ss
M. S. Apply on cotton or lint continuously.

20. For hæmorrhoids.

℞ Plumbi subacet.
Bals. Peru.
Ext. belladon.
Zinci. benzoat.....āā 3j
Adipis. .....℥j
M.

21. For hæmorrhoids (with tenesmus).

℞ Pulv. opii.
Ext. belladon. . . . . āā gr. x
Ol. Theobrom. . . . . q. s.
M. Ft. suppositories No. XV.

22. For hypodermic treatment of hæmorrhoids.

℞ Acid. carbol. (crystals) gr. xx—℥ij
Glycerinæ . . . . . q. s.
Aq. dest . . . . . q. s. ad ℥j
M.

23. For hypodermic treatment of hæmorrhoids.

℞ Acid. carbol. (crystals) . . ℥ij—℥iv
Glycerinæ . . . . . q. s. ad ℥j
M.

24. For hypodermic injection of hæmorrhoids (not much used).

℞ Acid carbol. (crystals) . . . 95 per cent.
Aq . . . . . 5 per cent.
M. S. 95 per cent. sol. carbolic acid.

25. For hypodermic treatment of hæmorrhoids (early formula).

℞ Acid carbol. (crystals melted) . ℥j—℥v
Ol. olivæ . . . . . q. s. ad ℥j
M.

26. For hypodermic treatment of hæmorrhoids ("Brinkerhoff System").

℞ Carbolic acid . . . . . ℥j
Olive oil . . . . . ℥v
Chloride of zinc . . . . . grs. viij
Mix.

The little pamphlet furnished to the itinerants purchasing

the "System" directs that the amount of injection inserted into the tumors shall be as follows:

Largest Piles	8	minims
Medium "	4 to 8	"
Small "	2 to 3	"
Club-shaped painless piles near orifice	2	"

"Brinkerhoff's System" forbids the injection of any but internal piles.

27. For hypodermic treatment of hæmorrhoids ("Rorick System").

℞ Carbolic acid.
Glycerinæ.....āā ʒij
Fl. ext. ergot.....ʒj
Water.....ʒiss
Mix.

28. For hypodermic treatment of hæmorrhoids ("Painless injection" of Dr. Green, a traveling pile doctor).

℞ Carbolic acid.....ℨj
Creosote.....gtt. x
Acid. hydrocyanic.....gtt. j
Olive oil.....ℨi

Mix and unite under water. Sig. Inject enough to turn the tumor an ashen grey color.

29. For hypodermic treatment of hæmorrhoids. (Dr. Silas T. Yount of Lafayette, Ind., advocates very weak injections, *viz*).

℞ (5 per cent. sol).
Acid. carbol.....gr. xxiv
Aq. dest.....ℨj
M.

℞ (3 per cent. sol).
Acid carbol.....gr. xviss
Aq. dest.....ℨj
M.

30. For fistula (Itinerant method).

℞ (First step)
Hydrogen peroxide.....℥j—℥iv
Aq.....q. s. ad ℥j
M. S. Inject the fistula deeply.

31. ℞ (Second step)
Acid carbol.....gr. xl—℥j
Glycerine or alcohol.....q. s.
Aq.....q. s. ad ℥j
M. S. Inject 15 drops after the hydrogen bubbles have ceased.

Or (Brinkerhoff)

32. ℞ Dist. ext. hamamelis.....fl. ℥v
Liq. fer. subsulph.....fl. ℥j
Acid. carbol. cryst.....gr. ij
Glycerinæ.....fl. ℥ij
M. S. Inject ten or fifteen drops deeply into the fistula, and press the track of the fistula with the finger, to force the fluid more deeply in.

Many itinerants finish the operation two hours later by injecting the fistula with equal parts of oil of eucalyptus and glycerine.

33. For fissure of the anus.

℞ Corrosive sublimate.....gr. j
Cryst. carbolic acid.....ʒ ij
Hydrochlorate of morphia.gr. v
Water.....fl. ℥iv
M. S. Apply with a camel's hair pencil.

34. For fissure (Allingham).

℞ Hyd. sub. chlor..... ....gr. iv
Pulv. opii.....gr. ij
Ext. belladon.....gr. ij
Ung. sambuci.....℥j
M. Sig. Apply several times a day.

35. For fissure.

℞ Hydrarg. oxid. flav.....gr. xxx
Ung. petrol.....℥i

36. For fissure.

℞ Iodoform.....℥j
Belladonna ointment.....℥ss.
Carbolic acid.....gr. x
Simple cosmoline.....℥ss
M.

Apply this ointment thoroughly every day, after having each time cleansed the sore with antiseptics, and touch with nitrate of silver very gently every third day.

37. For rectal ulcers (see also Nos. 4, 5, 6, 7, 8, 9).

℞ Argent. nit.....gr. ij
Aq. dest.....℥j
M. S. Inject and wash out with warm water.

38. For rectal ulcers.

℞ Iodoform.....℥ss
Bismuth. subnit.....℥j
Morph. sulph.....gr. j
Ol. theobrom.....q. s.
M. Ft. Suppositories No. X. S. Insert one, morning and night.

39. For prolapsus (Itinerant method).

℞ Cocaine hydrochlor.
Phenol sodique.....āā gr. viij
Aq.....℥j
M. S. Inject in spots one inch apart over the tumor. ("Brinkerhoff's system" advises its followers to avoid treating prolapsus).

40. For prolapsus (Vidal de Cassis).

℞ Ext. ergot. fl.....♏x—lx
S. Inject with hypodermic syringe.

41. For pruritus ani (parasitic form).

℞ Camphor.
Spts. rectif.....aā ʒj
Adipis.....℥j
M. S. Inside and outside the rectum.

42. For pruritus ani (Kelsey).

℞ Saponis viridis.
Ol. cadini.
Alcohol.....aā ℥j
M.

43. For pruritus ani.

℞ Chloroformi.....fl. ʒj
Ung. oxid. zinc.....℥j
M.

44. For pruritus ani.

℞ Mur. cocaine.....gr. xv
Mur. morph.....gr. x
Acid carbol. cryst.....ʒj
Tinct. aconiti rad.....fl. ʒiij
Unguent petrolii.....℥j
M.

This must not be inserted inside the verge in large doses.

45. For pruritus ani (Allingham).

℞ Liq. carbon. deter. (Wright's)..fl. ℥j
Glycerinæ.....fl. ℥j
Zinci oxid. pulvi, } .....aā ℥ss
Calamin. prep., }
Sulphuris precip. pulv.....℥ss
Aquæ pur.....℥vj
M.

46. For pruritus ani (Allingham).

℞ Sodæ biborat.....3ij
Morph. hydrochlor.....gr. xvi
Acid. hydrocyan. dilut....fl. ℥ss
Glycerinæ.....fl. ℥ij
Aquæ.....fl. ℥viij
M.

47. For pruritus ani (Kelsey).

℞ Acid carbol.....℥ss
Glycerinæ.....fl. ℥j
Aquæ.....fl. ℥iij
M.

It is pretty strong, and often requires to be diluted.

48. For pruritus ani (Kelsey).

℞ Chloral.....3j
Camphoræ.....3j
Ung. petrol.....℥j
M.

49. For pruritus ani.

℞ Menthol.....3j
Ol. amygd. dulc.....fl. ℥j
Acid. carbol.....3j
Zinc. oxid.....3ij
Cerat. simp.....℥ij
M.

50. For pruritus ani.

℞ Ung. picis.....3iij
Ung. belladon.....3ij
Tr. aconiti rad.....fl. 3ss
Zinci oxid.....3j
Ung. rosarum.....℥iij
M.

51. For pruritus ani.

℞ Ext. conii (freshly made) 3j
Lanolin.....3ij
M.

52. For pruritus ani (with external eruptions).

℞ Acid. salicyl.....gr. x
Spts. rectif.....3j
M.

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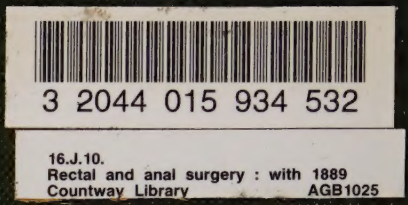
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